SEPTEMBER

Farm Chemicals

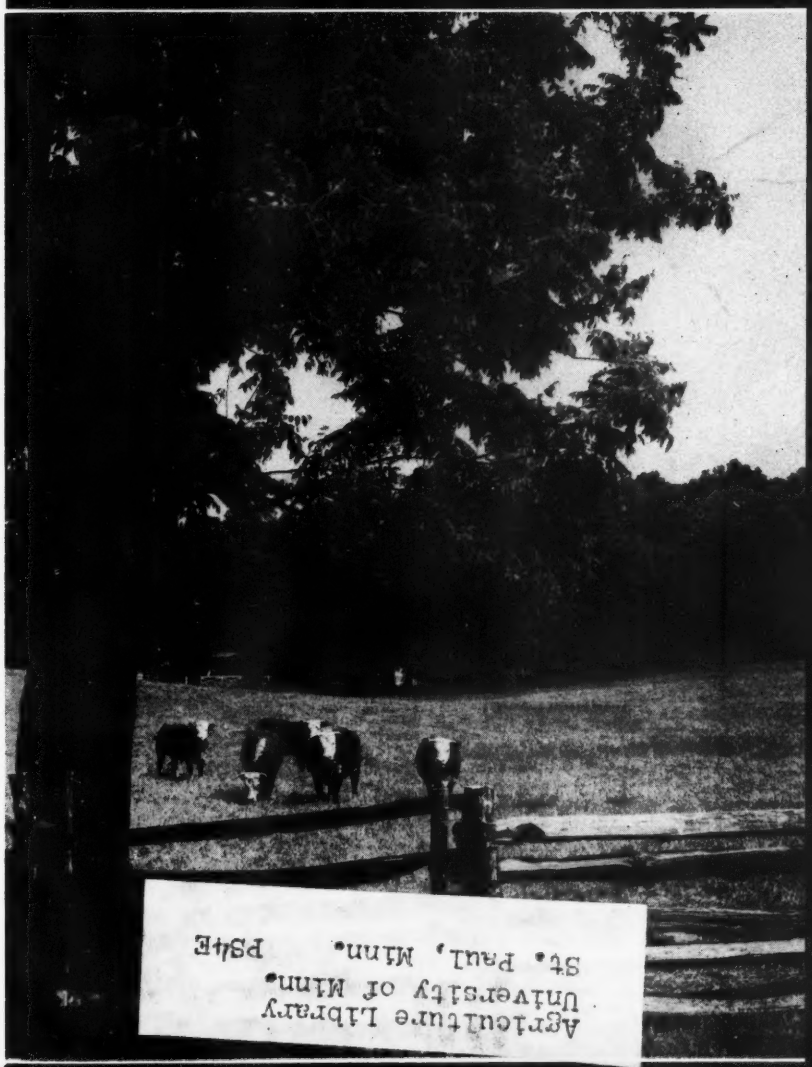
NAC Annual Meeting 41

Folex, a New Defoliant 42

Thimet Systemic Seed Treatment. . . 44

The Farm Market 48

Ohio Pesticide Institute 50



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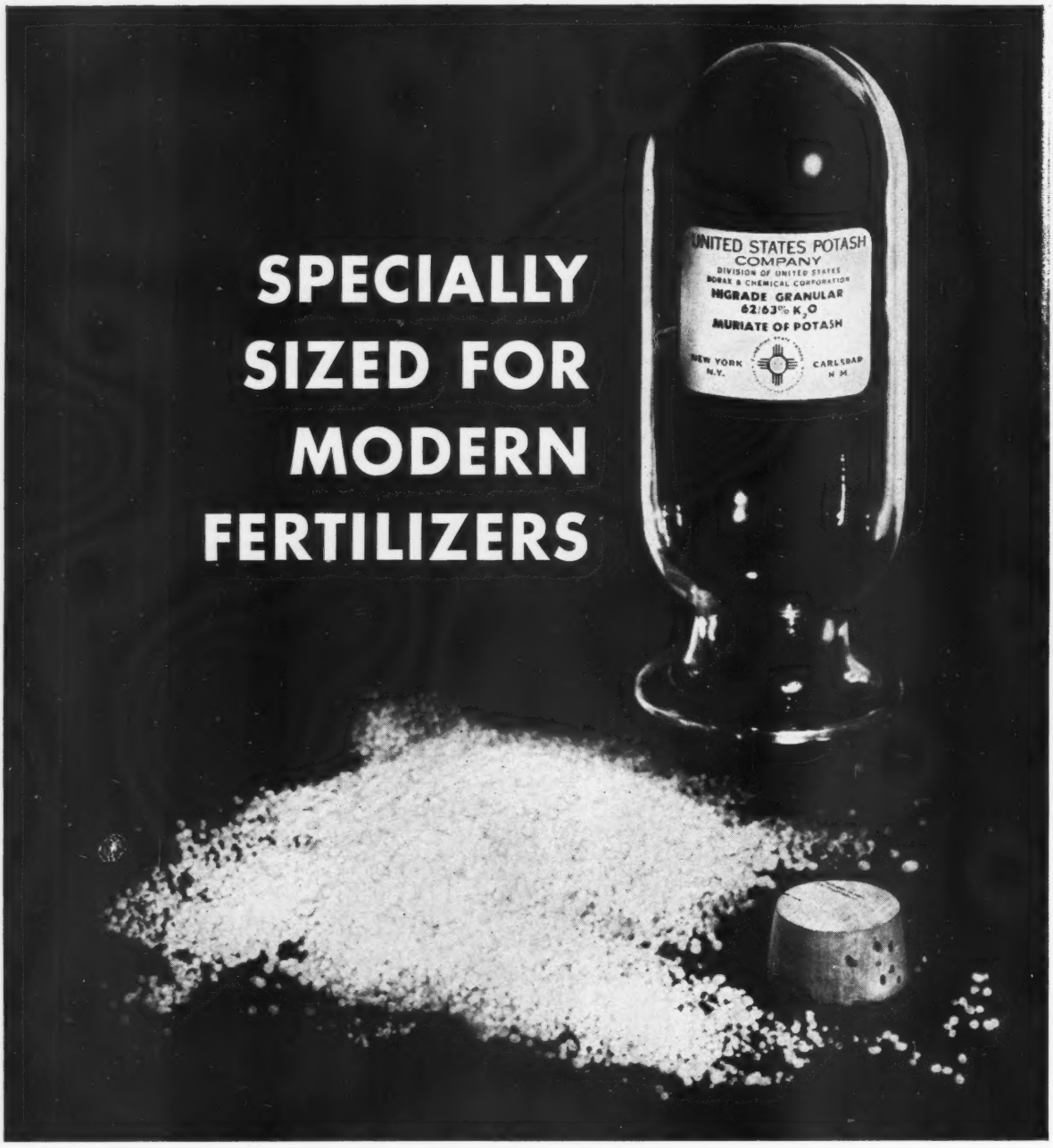

USP'S NEW HIGRAN

USP announces the FIRST Higrade Granular muriate of potash designed specifically for the manufacture of today's modern fertilizers. Its perfect whiteness attests to its purity—the highest now available in granular agricultural muriate of potash. Non-caking and free-flowing throughout, USP's new Higrade Granular potash contains 62/63% K_2O! A regular supply of this important new potash product is immediately available from the U.S. Potash Co.

USP also offers Higrade muriate of potash—62/63% K_2O and Granular muriate of potash—60% K_2O—both free-flowing and non-caking.

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DIVISION OF UNITED STATES BORAX & CHEMICAL CORPORATION
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PRODUCT OF NEW MEXICO U.S.A.
REG. U.S. PAT. OFF.

Dust a problem in your material handling?

Here's how Michigan Tractor Shovels help Swift & Company

Swift & Company's plant food division at Madison, Wisconsin has the usual problem encountered in the processing of raw materials such as potash and superphosphate, and in handling the finished plant foods.

Equipment used in these processes is exposed to long hours of continuous maneuvering while handling the bulk materials. Equipment must be durable to withstand the heavy loads, quick stops, and grit of raw material acting on the machine. Swift officials report the one-yard 77 hp Michigan Model 75B shown has given excellent results in meeting these requirements.

Moving potash 110 ft from bin to mixer, Michigan is timed delivering 60 loads (97,200 lbs) per hour. Unit changes direction and speed at flick of power-shift lever. No clutching needed.

Works round-the-clock

"It is dependable,"says Madison Assistant Superintendent Harry Peeler. "It worked round-the-clock during our latest two-month rush season. Its only stops were to add fuel, inspect oil, and change operators. We've had no troubles with grit in the power-train . . . and no axle failures."

Ken Kremelling, veteran tractor shovel operator, says, "Michigan's torque converter helps you heap big loads fast. Low bucket-carry helps you keep what you load. Power steer takes you around turns fast. And power shift helps you start back for the next load fast."

See Michigan advantages for yourself

A trial in your plant will show you how these same advantages can pay off for you. Write for details on the size Michigan that interests you—6, 10, 15, 20 or 27 cubic feet; 1, 1½, 1⅝ or 2¼ cubic yards.

Michigan is a registered trade-mark of

CLARK EQUIPMENT COMPANY
Construction Machinery Division
2461 Pipestone Road
Benton Harbor 7, Michigan

CLARK® EQUIPMENT

IN THIS ISSUE

▶ "More Sales—Bigger Profits" is the theme for the National Agricultural Chemicals Association's annual meeting in Spring Lake this month . . . **page 41.**

▶ Outstanding benefits to cotton farmers are promised by V-C's new cotton defoliant, Folex, which contains a new active ingredient . . . **page 42.**

▶ For a comprehensive report on American Cyanamid's new systemic soil treatment, Thimet, and comments on its effectiveness by farmers . . . **page 44.**

▶ 1957 was a big year for legislation affecting pesticides. NAC's technical adviser describes some of the 300 bills introduced during the year and tells of the association's activity in supplying pertinent facts to legislators . . . **page 47.**

▶ While selling in the farm market may get tougher during the next two years, sales of farm chemicals are likely to hold up. That's the outlook from Washington . . . **page 48.**

▶ About 90 manufacturers, dealers and technical people met at Wooster Aug. 13 and 14 to talk over latest advances against farm pests . . . **page 50.**

▶ There's a sizeable potential in post harvest disease control for the chemical manufacturer as well as the chemical specialty formulator . . . **page 52.**

COVER PICTURE

As a herd of Herefords grazes, they gaze across the fence to the next pasture. Although their field looks pretty good, the neighboring farmer fertilized adequately, and "the grass IS greener on the other side."

Farm Chemicals

Vol. 120 No. 9 September 1957

PIONEER JOURNAL OF THE INDUSTRY

FEATURES

NAC Annual Meeting 41

FOLEX, a New Cotton Defoliant 42

Thimet, A Comprehensive Report on 44

A Big Year for Legislation Affecting Pesticides 47

The Farm Market 48

Ohio Pesticide Institute 50

Post Harvest Disease Control of Fruits and Vegetables 52

INDUSTRY NEWS

Business & Management . . . 4

Calendar 10

People 14

Associations & Meetings . . . 20

DEPARTMENTS

Viewing Washington On Agriculture 27

Reader Service 37

Equipment & Supplies 56

Suppliers' Briefs 57

Chemicals 59

Patent Reviews 60
Dr. Melvin Nord

Pest Reports 61

Statistics 63

Fertilizer Materials Markets 64

Buyers' Guide 67

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MEMBER BUSINESS PUBLICATIONS AUDIT

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DAVISON

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UNEXCELLED QUALITY—Because of Davison's more than century of experience in fertilizer formulation DAVISON Granulated Triple Superphosphate is the standard by which all other granulated products are compared. It is guaranteed to satisfy you on every count.

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Division of W. R. Grace & Co.

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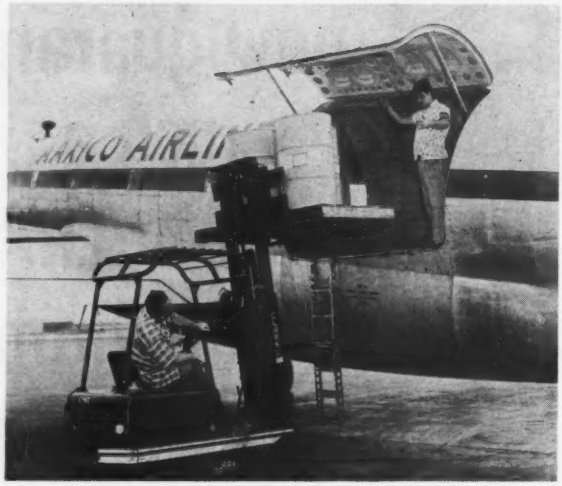
FARM CHEMICALS

Business & Management

ANSWER RUSH CALL FOR INSECTICIDES

In response to a request for insecticides sent out by Louisiana health officials in the wake of Hurricane Audrey, American Cyanamid Co. recently air-shipped malathion to the storm-battered area.



Malathion is loaded for air shipment to New Orleans. From there, it was trucked to Lake Charles, seat of clean-up operations.

Enough insecticide was donated to spray trouble spots in the three worst hit parishes and bring under control mosquito and other insect vectors capable of transmitting disease to humans.

The malathion is being applied by public health teams under the supervision of Dr. G. Vasquez, health unit director. The teams are using large spraying units mounted on trucks and jeeps, and smaller portable hand units.

The insecticide was accepted by Dr. W. J. Reins, director of the Louisiana State Health Department, from Dr. Richard W. Winters, local representative of Cyanamid's Farm and Home Div.

ORTHO ACQUIRES AGRI-SERV FACILITIES

California Spray-Chemical Corp. has acquired the greater part of the anhydrous ammonia distribution facilities of the Agricultural Ammonia Service, Inc., of Santa Paula.

In announcing the acquisition, A. W. Mohr, Calspray president, said that his company would take over the entire facilities and operations of Agri-Serv from the Lodi-Stockton area, south to the Kern county line. Agri-Serv, an authorized distributor of Ortho NH_3 since 1955, will continue to act in that capacity in Ventura county, Los Angeles county and the southern part of Santa Barbara county.

Acquisition of the Agri-Serv facilities will place under the Ortho banner numerous storage tanks with a total bulk capacity of 200,000 gallons, 600 field tanks and more than 400 applicator tanks and rigs.

NEW INCORPORATIONS

Surcrop Development Corp. has been granted charter of incorporation listing capital stock of 200 shares no par value. Directors are Leo Zivin, Elliott Tantnbaum and Murray F. Rosenthal, all of 320 Broadway, New York City 7.

Westchester True-Soil, Inc., 77 Bedford Road, Katonah, New York, has been granted charter of incorporation listing capital stock of $20,000. John J. Dunne, Irene Anderson and Harry W. Wolf are directors.

ICC OKAYS RAIL FREIGHT RATE INCREASES

A decision handed down August 6 by the ICC increases freight rates 7 per cent within and between the Eastern and Western territories and 4 per cent within, from and to the Southern territory. The increases are effective on 15 days' filing notice.

Hold-downs previously imposed by ICC were boosted from 30 to 40 cents per ton on phosphate rock, and from 50 to 75 cents per ton on potash.

Coupled with the Commission's earlier decision on the emergency portion of Ex Parte 206, this action increases freight rates 14 per cent for the Eastern territory, 12 per cent for the Western territory, and 9 per cent for the Southern territory.

COMMERCIAL SOLVENTS QUARTERLY SALES, INCOME

Consolidated net earnings reported by Commercial Solvents Corp. for the quarter ended June 30 were $528,664, equal to $.19 per share on 2,741,422 shares of common stock. Earnings for the same quarter of 1956 amounted to $.26.

Sales for the three month period of 1957 were $14,814,345, compared with $15,272,721 for the second quarter of 1956.

TEXAS GULF SULPHUR 2nd QUARTER RESULTS

Net income of Texas Gulf Sulphur Co., Inc. for the three months ended June 30, 1957 was $5,365,996, or 54 cents per share, on the 10,020,000 shares in the hands of stockholders. This compares with net income of $7,473,589 or 75 cents per share, on the same number of shares for the similar 1956 period.

Gross revenue from sales was $19,238,092 for the second quarter of 1957, compared with $22,924,353 for the like quarter of last year.

"Even *wet* they're strong...

and burlap is easy to grasp," says Harlan Jackson, Montgomery, Ala. farmer. "I always order my fertilizer in burlap bags. I can sell the empties or use them around the farm. We can't afford costly delays and spillage because of torn containers—that's why we always use burlap bags. They're strong—they won't burst—and we can handle them as roughly as we want."

This farmer likes fertilizer in burlap bags that are easy to grasp and don't tear. How about your own handling and spillage problems? *What bag is strong even when wet?*

Just ask your own customers—

they'll tell you that burlap

Is strong — takes dragging, dropping, *man-handling* — any tough job on the farm.

Gives good ventilation — keeps farm supplies and products fresh.

Laughs at sudden showers — wetness or dampness can't weaken it.

Saves money — extra value from re-sale and re-use.

Saves storage space — stacks to any height without slipping.

Has 1000 uses — always in demand on the farm (popular with farm wives, too!)

THE BURLAP COUNCIL

of the Indian Jute Mills Association

155 East 44th Street, New York 17, N. Y.

"A complete chain of 'EXTRAS'– that's why we use International's Triple,"

says* E. D. KINGSBURY, *of Kingsbury & Company, Inc., Indianapolis

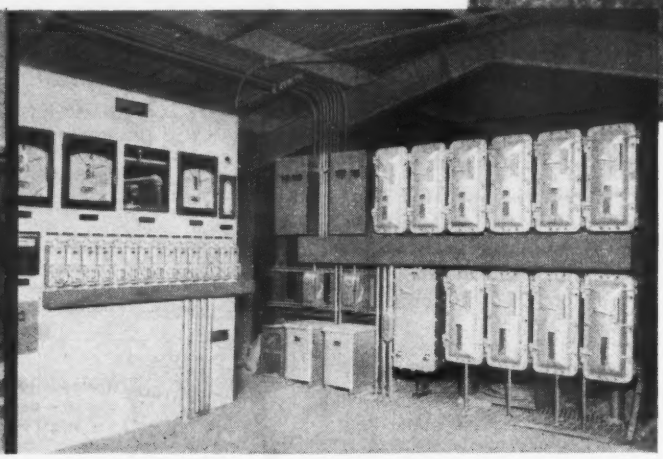
MORE and more fertilizer manufacturers like E. D. Kingsbury find International supplies far more than a superior product. "We like the way International emphasizes research, develops new products, pioneers new approaches to shipping and technical service. These are all 'EXTRAS' that are reflected in savings when we buy International Triple.

"Consistency in high analysis and the particle size of the product also contribute to savings in formulation and granulation.

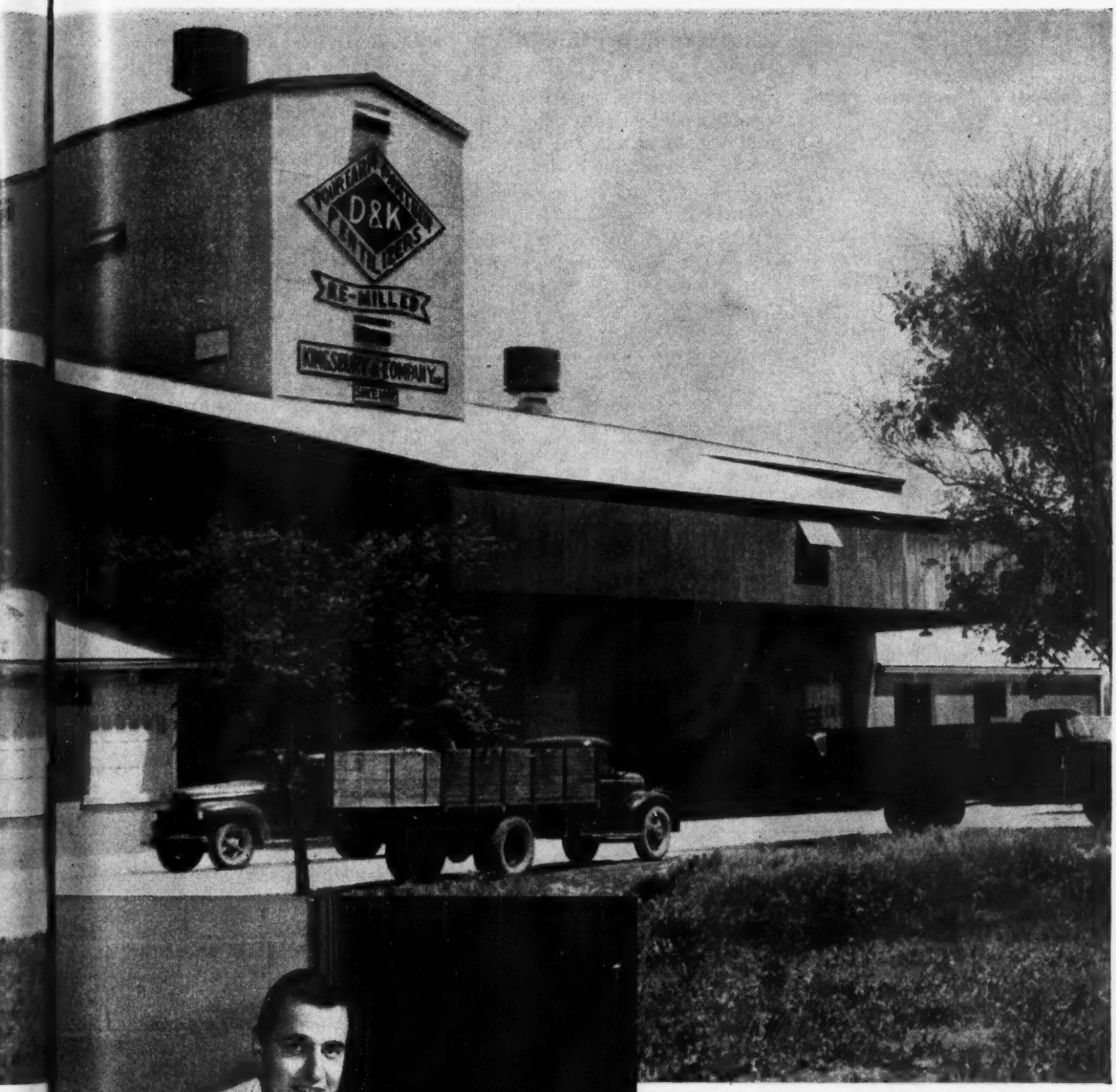
"In addition, International's good scheduling is very important in the height of the season. The best ingredients in the world are worthless to us if they aren't in our plant on schedule."

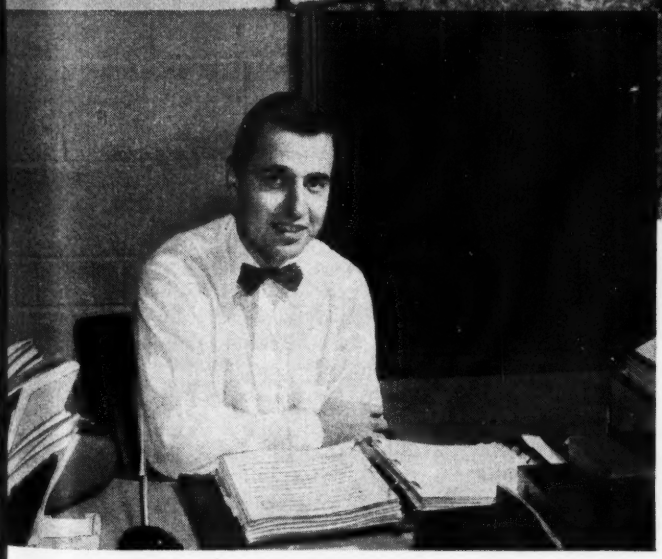
(You can realize similar savings in time, handling, formulation and granulation. Write or wire for details.)

Vice President E. D. Kingsbury, left, and Plant Superintendent W. N. Brinson report: "International's consistency of product and ease of handling prove important to our production."



Typical of the Kingsbury pace in modernization is this multi-control panel giving one man complete command over machine speed, material flow. The 60-year-old D & K line includes 15 grades of commercial fertilizer.





The Kingsbury organization gears customer service to the same efficient scheduling and fast delivery they insist from suppliers. At the Peru, Indiana plant ample dock space and modern facilities keep D & K buyers on top of field operations.

Vice-President E. D. Kingsbury (at left) along with his father, President George H. Kingsbury handle management duties at both Indianapolis and Peru plants.

INTERNATIONAL MINERALS & CHEMICAL CORPORATION

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FARM CHEMICALS

Business & Management

STAUFFER TO BUILD HUGE ACID PLANT

A 400 ton-per-day capacity sulfuric acid regeneration plant which will process oil refinery sludge acids will be built at Hammond, Ind., according to Hans Stauffer, president of Stauffer Chemical Co. Construction was expected to begin immediately, and the plant is scheduled to be in full scale production next July. It is estimated that Stauffer's investment in the new facility will be in excess of $4 million.

Company officers cited two reasons for establishing the project in Hammond: The ready availability of adequate supplies of raw material, and to better serve the process acids needs of the many oil refineries in the Hammond-Whiting-Chicago area.

The new Hammond plant will be the eighth major sulfuric acid regeneration installation which Stauffer has built in recent years.

CSC OPENS NEW EASTERN DISTRICT SALES OFFICE

Commercial Solvents Corp. is opening a Mid-Atlantic office with headquarters at 196–202 Blanchard St., Newark, N. J., according to J. V. O'Leary, general sales manager.

Arthur W. Luedeke has been named manager of the new district. Since joining CSC in 1937, Luedeke has been district manager of the Cleveland office and of the New York office.

The office will serve New Jersey, Eastern Pennsylvania, Maryland, Delaware, District of Columbia, Virginia and North Carolina.

HERCULES SIX MONTHS INCOME BELOW A YEAR AGO

For the six months ended June 30, 1957, Hercules Powder Co. reports net income equal to $1.03 a share of common stock. This compares with net income in the first six months of 1956 equal to $1.18 a share of common stock.

Net income was equal to 55 cents a share of common stock for the second quarter of 1957, 8 cents lower than the 63 cents reported for the second quarter of 1956.

Net sales and operating revenues for the period were $124,752,266 compared with $120,433,778 for the corresponding 1956 period.

AMM. NITRATE FERTILIZER USED AS BLASTING AGENT

Use of ammonium nitrate fertilizer as a blasting agent is well beyond the field test stage and has become standard with many heavy construction contractors, quarry men and strip coal mine operators, according to Tom K. Smith, Jr., director of marketing for Monsanto Chemical Co.'s Inorganic Chemicals Div.

Three major factors contribute to its growing popularity, according to Smith: it is extremely safe, can be controlled by experienced powder men and is far cheaper than conventional blasting agents. Ammonium nitrate fertilizer remains fertilizer until it is poured into blasting holes on the job, Smith said. There three conditions must prevail before it becomes an explosive: it must be mixed with the correct amount of fuel oil, it must be confined and it must be detonated by a charge of dynamite.

HIGHER SIX-MONTH SALES AND EARNINGS FOR AP&CC

Operations of American Potash & Chemical Corp. in the first half of 1957 resulted in higher sales than in the corresponding period last year, President Peter Colefax has announced. While net income also registered a gain, per share earnings were slightly lower because of increased shares outstanding.

Sales for the six months ended June 30, 1957 were $21,767,946, compared with $19,956,846 reported at the halfway mark last year. Net income amounted to $2,485,332, equal after deducting preferred dividend requirements to $1.25 per share on the 1,905,619 shares of Class A and Common stock outstanding. This compared with income of $2,396,625 or $1.39 per share for the six month period of 1956.

EXCHANGE JOBS AT EASTMAN

An "exchange-of-duties" training program has been announced by officials of Eastman Chemical Products Co., Inc.

J. H. Sanders and R. W. Miller discuss new responsibilities.

First exchange in the new program involves J. H. Sanders and R. W. Miller. Sanders is currently the Chemical Division's Cleveland District manager and Miller, product manager for all industrial chemicals made by Kodak's Texas Eastman Div. in Longview, Tex.

In taking over Miller's desk at the company's head office in Kingsport, Tenn., Sanders will assume responsibilities for marketing all Texas Eastman chemical products. Miller's move to Cleveland will place him in charge of the division's direct sales in that area.

It is expected that the exchange-of-duties program will require assignments of from one to two years to provide each participant with a thorough background of experience in his new responsibilities.

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TRIPLE SUPERPHOSPHATE

Guaranteed 46% Available Phosphoric Acid!

Consistently uniform in particle size and chemical structure. A free flowing, dust free product that will not cake or lump in storage or bridge over in the hopper. Produced under exacting chemical and physical controls to provide maximum in plant food value. U. S. Phosphoric Products granular Triple Superphosphate drills free releasing the desired amount of plant food through even uniform flow and distribution.

Available in Bags or Bulk

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Through Six Basic Chemical and Physical Analysis

HIGH WATER SOLUBILITY
High Water Solubility is a Characteristic of all 3 Grades

RUN-OF-PILE
Fine Texture, Highest Porosity, Large Surface Area, Small Particle Size, for Maximum Ammoniation-Granulation.

GRANULAR
Dust Free, Free Flowing, Uniform Particle Size, Medium Hardness, No Bridging Over, for Direct Soil Application.

COARSE
For Intermediate Ammoniation to Produce a Semi-Granular Product. Also Affords Excellent Compatable Mixing with Granular Potash, for Minimum Segregation, in Alkaline Grades.

There's a BRADLEY & BAKER office near you. Their representative would be pleased to consult with you on your requirements and to advise on your most convenient delivery routings.

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MURIATE OF POTASH for the PLANT FOOD INDUSTRY

THIS symbol stands for high-grade coarse and uniform Muriate of Potash (60% K_2O minimum). Southwest Potash Corporation provides a dependable supply of HIGH-K* Muriate for the plant food industry.

*Trade Mark

Southwest Potash Corporation

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CALENDAR

Sept. 4-6. Annual Meeting, National Agricultural Chemicals Assn., Essex & Sussex, Spring Lake, N. J.

Sept. 5-6. Great Lakes States Anhydrous Ammonia Meeting, Michigan State Univ., East Lansing, Mich.

Sept. 8-15. International Congress of Crop Protection, Hamburg, Germany.

Sept. 11-13. Florida Entomological Society Annual Meeting, San Juan Hotel, Orlando, Fla.

Sept. 24-25. New England Fertilizer Conference, Bald Peak Colony Club, Melvin Village, N. H.

Oct. 2-4. Annual Beltwide Cotton Mechanization Conference, Shreveport, La.

Oct. 3. New Jersey Fertilizer Conference, Rutgers University, New Brunswick, N. J.

Oct. 3-5. Pacific Northwest Plant Food Assn. Annual Convention, Sun Valley, Idaho.

Oct. 7-8. Western Agricultural Chemicals Assn. Fall Meeting, Villa Hotel, San Mateo, Calif.

Oct. 14. Sixth Annual Sales Clinic, Salesmen's Association of the American Chemical Industry, Hotel Roosevelt, New York City.

Oct. 15. Annual meeting, Assn. of Official Agr. Chemists, Washington, D. C.

Oct. 17. Conference on Chemical Control Procedures, Shoreham Hotel, Washington, D. C. Sponsored by the National Plant Food Institute.

Oct. 17. (8 p.m. States Relations Committee) & **18,** The Assn. of American Fertilizer Control Officials, Shoreham Hotel, Washington, D. C.

Oct. 21-22. Fertilizer Section, National Safety Congress, LaSalle Hotel, Chicago.

Oct. 29-31. Entomological Society of Canada and Entomological Society of Alberta Annual Meetings, Lethbridge, Alb.

Oct. 31-Nov. 1. Southern Fertilizer and Southern Soil Fertility Conference, Dinkler Plaza Hotel, Atlanta, Ga.

Nov. 3-5. 34th Annual Convention, California Fertilizer Association, St. Francis Hotel, San Francisco.

Nov. 6-8. Fertilizer Industry Round Table, Sheraton Park Hotel, Washington, D. C.

Nov. 13-15. National Aviation Trades Assn. Annual Convention, Hotel Adolphus, Dallas, Tex.

Nov. 17-19. Annual Convention, National Fertilizer Solutions Assn., Netherland-Hilton Hotel, Cincinnati, Ohio

Dec. 2-5. Fifth Annual Meeting, Entomological Society of America, Hotel Peabody, Memphis, Tenn.

Dec. 11-13. Agricultural Ammonia Institute Annual Meeting, Hotel Marion, Little Rock, Arkansas.

FOR THE PEAK IN CUSTOMER SATISFACTION

Top Quality Materials

Rely on Phillips 66 Premium Fertilizer Materials for Your High-Quality Mixtures

- NITROGEN SOLUTIONS
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DENVER, COLO.—*1375 Kearney Street*
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WICHITA, KAN.—*501 KFH Building*

Phillips 66

FARM CHEMICALS

Business & Management

SALES AND EARNINGS REPORTED BY STAUFFER

Stauffer Chemical Co.'s net earnings for the second quarter 1957 were $4,048,000 or $1.17 per share, as compared with second quarter 1956 earnings of $4,041,000 or $1.17 per share. Net sales for the quarter were $42,290,000, off slightly from $42,704,000 reported for the corresponding period of 1956.

For the first six months of 1957, net earnings were $7,154,000 or $2.07 per share, a decrease of 2½ per cent from earnings of $7,344,000 or $2.12 per share for the first half of 1956. Net sales for this year's six months of $79,337,000 decreased 1½ per cent from sales of $80,471,000 in the first six months of 1956.

Agricultural chemicals sales during the six month period decreased 15 per cent, the company reported, due primarily to unusual weather conditions in several major market areas. However, demand had improved in July and a favorable third quarter was expected.

IMC PLANT FOOD DIV. SCHOLARSHIP AWARDS

A Minnesota high school boy, George Ruszat, and a South Carolina high school girl, Margarette Roach, have been awarded $2,400 four-year scholarships to the colleges of their choice by the Plant Food Div. of International Minerals & Chemical Corp. In addition, four one-year scholarships were awarded to high school seniors William Lorenz, James H. Felts, Donna Lou Jones and Evelyn McKay.

The four-year scholarships are presented annually to a daughter or son of an employee of the company. The one-year scholarships are awarded to a boy or girl who has done well at school, but who has been particularly outstanding in 4-H Club, FFA and other leadership activities.

NEW UREA PLANT FOR SPENCER CHEMICAL

Spencer Chemical Co. recently announced plans to construct a new urea plant at the company's Henderson, Ky., Works. Kenneth A. Spencer, president, said that the new facility will produce about 100 tons a day of urea and should be completed in the summer of 1958. The company already produces urea at its Vicksburg, Miss., Works.

The new facilities will convert a portion of the ammonia currently produced at the Henderson Works to the urea-type solutions now being made at Vicksburg and also to prilled solid urea, an addition to the company's product line.

USP ESTABLISHES PLANT FOOD DEVELOPMENT DEPT.

Naftel

Turner

Dr. James A. Naftel has been named director and James R. Turner, chief agronomist of the newly established Plant Food Development Dept. of United States Potash Co. Div. of U. S. Borax & Chemical Corp.

Prior to the merger of USP with U. S. Borax & Chemical, Dr. Naftel was manager of the Plant Food Dept. of Pacific Coast Borax Div. and Turner southern agronomist. Dr. Naftel will continue to supervise plant food borate product research, development and use, and will complement research work on potash where required.

The department was created to fulfill the need for a specialized section to handle plant food development problems relating particularly to borates. Under the new organization, sales of fertilizer borates, etc., will be handled by the USP Sales Dept., thus allowing more efficient use of manpower and increased customer services.

For the immediate future, the Plant Food Development office will remain at Auburn, Ala. In addition, an office will be maintained at the division headquarters in New York City, where Dr. Naftel will spend part time.

HOOKER REPORTS FIRST SIX MONTHS INCOME

Sales and net income after taxes of Hooker Electrochemical Co., Niagara Falls, New York, and its wholly-owned subsidiaries for the first six months of the company's fiscal year ended May 31, 1957, show a decline over the same period last year, according to the company's semi-annual statement.

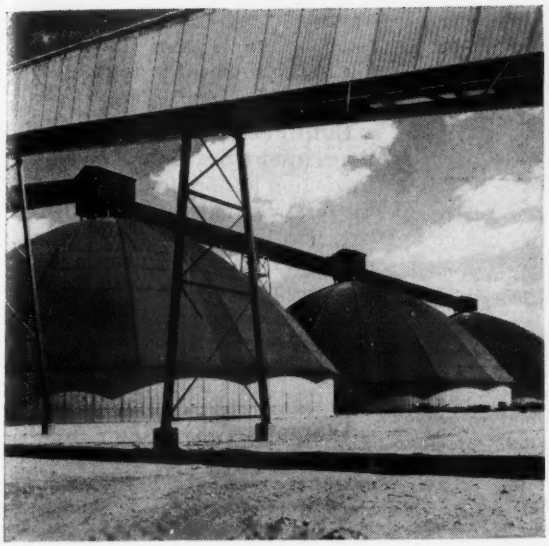
Net sales for the period were $53,765,600, compared with $55,131,500 for the six months ended May 31, 1956. Net income after Federal taxes in the latest period was $4,596,200, equal to earnings of $.70 per share of currently-outstanding common stock, after payment of preferred dividends. This compares with net income of $6,187,800 and earnings of $.94 per common share for the like period of 1956.

Commenting to stockholders, R. Lindley Murray, board chairman and Bjarne Klaussen, president, stated that a recently-launched earnings improvement program headed by a top management committee is critically examining functions, activities and policies throughout the company "in a major effort to counteract the cost-price squeeze evident throughout the chemical industry." They believe that "definite benefits will result."

MICH. CHEM. EARNINGS AND SALES INCREASE

A net profit after taxes of $.50 a share of common stock was reported by Michigan Chemical Corp. for the six months ended June 30, 1957. This compares with $.31 a share for the same period of 1956. Earnings were $347,295 in 1957 against $212,123 in the 1956 six month period.

Net sales for the 1957 first half were $4,285,182, a gain of 19 per cent over 1956 first six month sales of $3,588,997.



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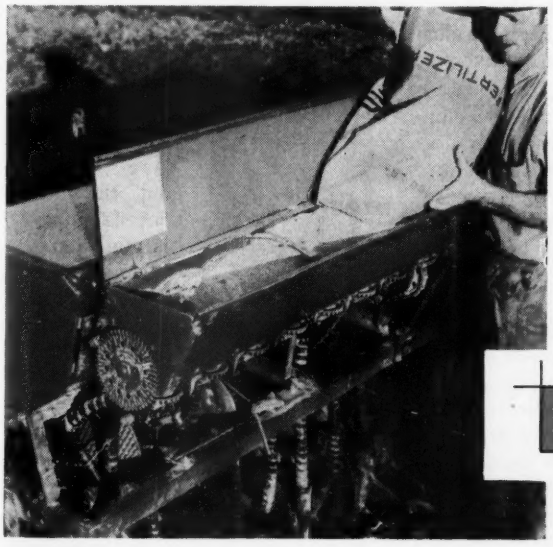
These qualities enable the manufacturer to offer a better product to the farmer for his plant food dollar.



NATIONAL POTASH COMPANY
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FARM CHEMICALS People

American Agricultural Chemical Co. appointments: J. H. Brown becomes sales manager at Baltimore, Md.; C. I. Mothershead succeeds him as sales manager at Alexandria; Everett B. Stalnaker, Jr., assistant manager of sales at Buffalo, is transferred to Baltimore; N. E. Edwards is named assistant manager of specialty fertilizer at New York; H. D. Coulter succeeds Edwards as Norfolk sales manager; D. A. Brogan, to sales supervisor for specialty fertilizer sales, New York; E. W. Sale joins the Chemical Dept. at Detroit; J. A. Layton succeeds Sale as superintendent of the Detroit works.

H. C. MacKinnon becomes responsible for production as assistant superintendent at Carteret; R. L. Etheridge takes over responsibility for production as superintendent at the Saginaw plant.

American Chemical Paint Co. Henry Sontheimer, 75, who was vice president in charge of foreign affairs for ACP from 1925 until his retirement in 1940, died at his home in Beverly Hills, Calif., July 24.

Atkins, Kroll & Co. announces several shifts of key personnel: W. A. Ashman, partner, for the past two years resident in Los Angeles, returns to his post at San Francisco headquarters. E. T. Tolin resumes as manager of southern Calif. operations. He is succeeded in the New York office by C. E. Tanner, formerly of Wessel Duval Co.

Callery Chemical Co. Robert G. Schmidt, a chemical engineer, has been named project manager for the firm's new $4 million plant at Lawrence, Kans. Stanley J. Demski was appointed construction manager of the plant.

The Lawrence plant, now under construction, is designed to produce boron specialty chemicals for commercial use.

California Spray-Chemical Corp. Charles Lupsha has been named as assistant to E. W. Cannon, vice president and manager of the Marketing Dept. He will assist in the development of sales policies, procedures and programs for Calspray. Lupsha had been branch manager of merchandising at the Maryland Heights, Mo., office of Calspray.

Climax Molybdenum Co. Ian K. MacGregor joins Climax as vice president—eastern operations. Formerly general manager of Manning, Maxwell and Moore, Inc., MacGregor was educated in Glasgow, Scotland, receiving his BS in Metallurgical Engineering from the University of Glasgow in 1935.

MacGregor

Chemical sales and development activities of the firm, formerly separate functions, have been consolidated for more effective sales effort. George L. Innes has been named to head these activities.

Columbia-Southern Chemical Corp. Appointment of C. T. Robertson as district manager for the Chicago sales office recently was announced. Formerly assistant district sales manager in New York City, Robertson succeeds I. G. Stewart who will continue in an advisory capacity until his retirement in December.

Connecticut Agricultural Experiment Station. Lloyd V. Edgington has been appointed to the research staff in plant pathology. Dr. Edgington goes to Connecticut from the University of Wisconsin, where he has carried on plant disease research since earning the Ph.D. degree there in 1956.

Diamond Alkali Co. A. L. Geisinger, vice president and general manager of the Plastics Div. since 1953 and a 38-year veteran with the firm, will retire at the end of the year.

James P. Okie, assistant general manager of Diamond's Plastics Div. for the past five months, will succeed Geisinger as general manager of the division. Okie's appointment is effective immediately.

Until his retirement Dec. 31, Geisinger will continue as a vice president of the company, devoting his attention chiefly to transfer of managerial responsibility to Mr. Okie.

Dow Chemical Co. Dr. William H. Schuette, general manager of the Midland Div., has been elected to the company's board of directors.

DuPont Co. Donald G. Zinter has been named as sales representative for DuPont nitrogen products to a new sales territory covering southern Delaware, Maryland, the District of Columbia and parts of Virginia and West Virginia.

Zinter

A native of Chicago, Zinter attended the University of Rochester, N. Y. He joined DuPont in 1957 after being associated with the Rochester Fertilizer Co.

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FARM CHEMICALS *People*

Cooney

Cooney to the eral manager of Flag Sulphur is announced by the firm's board of directors. Cooney's entire business career has been in the agricultural field, for the past 9 years with Flag Sulphur as salesman and sales manager.

W. R. Grace & Co. Andrew J. Foglia, Frederick C. Foster and Roger M. Weil have joined the staff of W. R. Grace & Co.'s Polymer Chemicals Div. in Clifton, N. J., where they will be assigned to polymer research and development.

Grand River Chemical Div. of Deere & Co. has appointed Jim Branstetter sales representative in New Mexico, Arizona and West Texas. Branstetter is a 1957 graduate of New Mexico A & M College, where he received his degree in Agronomy. He will make his home in Albuquerque.

Branstetter

Hooker Electrochemical Co. is realigning its research and development staff in a continuing program of integration. New research managers appointed are Dr. J. Howard Brown, in charge of phosphorus chemistry research, analytical and physical chemistry laboratories, and another laboratory now being planned; Morton S. Kircher, in charge of inorganic and electrochemical research, and the Virgo laboratory, negotiations for licensing the Hooker cell, and research at the Boron isotope plant in Model City which Hooker operates for the AEC; Dr. Jack S. Newcomer, in charge of organic chemical research which includes agricultural chemicals, fluorine chemicals and organic synthesis.

International Minerals & Chemical Corp. H. E. Causey, for 20 years associated with the fertilizer business, has joined IMC as technical sales engineer with the Agricultural Sales Dept. of the company's Potash Div. Causey will work directly with fertilizer manufacturers, acting as the company's field representative in assisting with the solution of technical production problems.

Causey

Appointment of Bryce L. Rhodes as general manager of the Phosphate Chemicals Div. is announced by H. F. Roderick, division vice president. Rhodes, who

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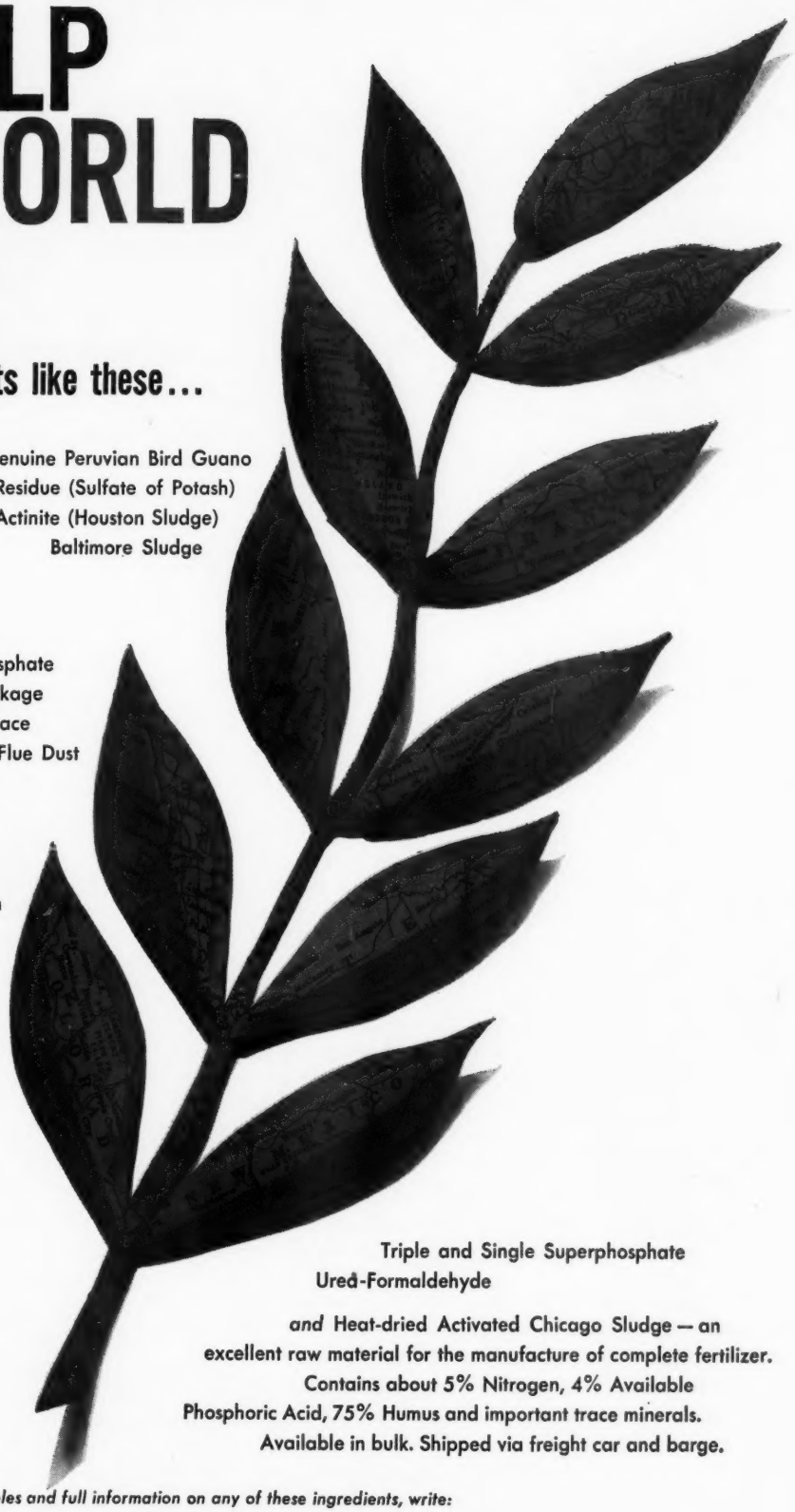
Precipitator Cement Flue Dust
(Sulfate of Potash)

Muriate of Potash
Ammonium Sulfate
Potassium Nitrate
Urea



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FARM CHEMICALS People

Rhodes

joined IMC in 1954 as development manager of the division, was named its development and production staff manager last year. Previously, he was a vice president of Synthron, Inc., textile chemical manufacturers.

Lion Oil Div. of Monsanto Chemical Co. H. Harold Bible became vice president and assistant general manager of the division Aug. 1. Bible, who had been director of manufacturing since Dec., 1955, joined Lion at El Dorado in March 1942.

Manufacturing Chemists' Assn., Inc. Elkins Oliphant II has joined the staff of the association as public relations representative. He had been with Nitrogen Div., Allied Chemical & Dye Corp.

Michigan Chemical Corp. has added Lynn H. Hahn to its research staff and Justin L. Beeson to its engineering research staff.

Mid-South Chemical Corp. sales manager David H. Bradford Jr. has been elected vice president by the board of directors. Bradford has been sales manager of Mid-South Chemical since it was first organized nine years ago. Before going to Mid-South, he was with Pure Oil Co.

Bradford

Mississippi Chemical Corp. Dr. W. B. Andrews has resigned as agronomist at Mississippi State College to accept the position as technical sales director with Mississippi Chemical Corp. and Coastal Chemical Corp. Dr. Andrews had been associated with Mississippi State College and Mississippi Agricultural Experiment Station since his graduation from the college with a master's degree in 1931 except for two years of graduate study at Michigan State College when he received his doctor's degree.

Mississippi River Chemical Co. Louis E. Wheeling has recently joined the Sales Dept. He will assist Bradley & Baker, the company's sales agents, in marketing MRC nitrogenous products. Wheeling attended Missouri University for five years before going with Swift & Co.'s Plant Food Div. Most recently, he was connected with Olin Mathieson as fertilizer manager of the Overseas Div.

Wheeling

Nitrogen Div., Allied Chemical & Dye Corp. Robert L. Riggs is new manager of the Hopewell, Va., plant, succeeding Frank A. Ernst who retired Aug. 31. Virgil A. Peringer succeeds Riggs as Omaha plant manager, moving up from general superintendent.

F. S. Royster Guano Co. Arthur O. Carraway, controller, has been elected to membership in the Controllers Institute of America.

O. M. Scott & Sons. Dr. George S. Kido has been named director of western research. He was formerly associated with Scotts Central Research Div. in Marysville, O., and more recently was director of the insecticide testing laboratory of The Wisconsin Alumni Research Foundation. He will make his headquarters in San Francisco.

Smith-Douglass Co. Willard A. Ashburn has been elected the company's president and chief executive officer. Ralph B. Douglass, whom Ashburn succeeds as president, was named to the new office of chairman of the board, with responsibility for general supervision of the company. Douglass reached retirement age last year, and the new position was created at his request.

Ashburn began practicing law in 1921 after graduation from the University of Virginia. Prior to joining the Smith-Douglass staff in 1953, he had served as the company's general counsel for a number of years.

The Texas Co. Election of L. C. Kemp, Jr., as vice president in charge of Texaco's Petrochemical Dept. has been announced by Augustus C. Long, chairman of the board. Kemp previously served as general manager of the department.

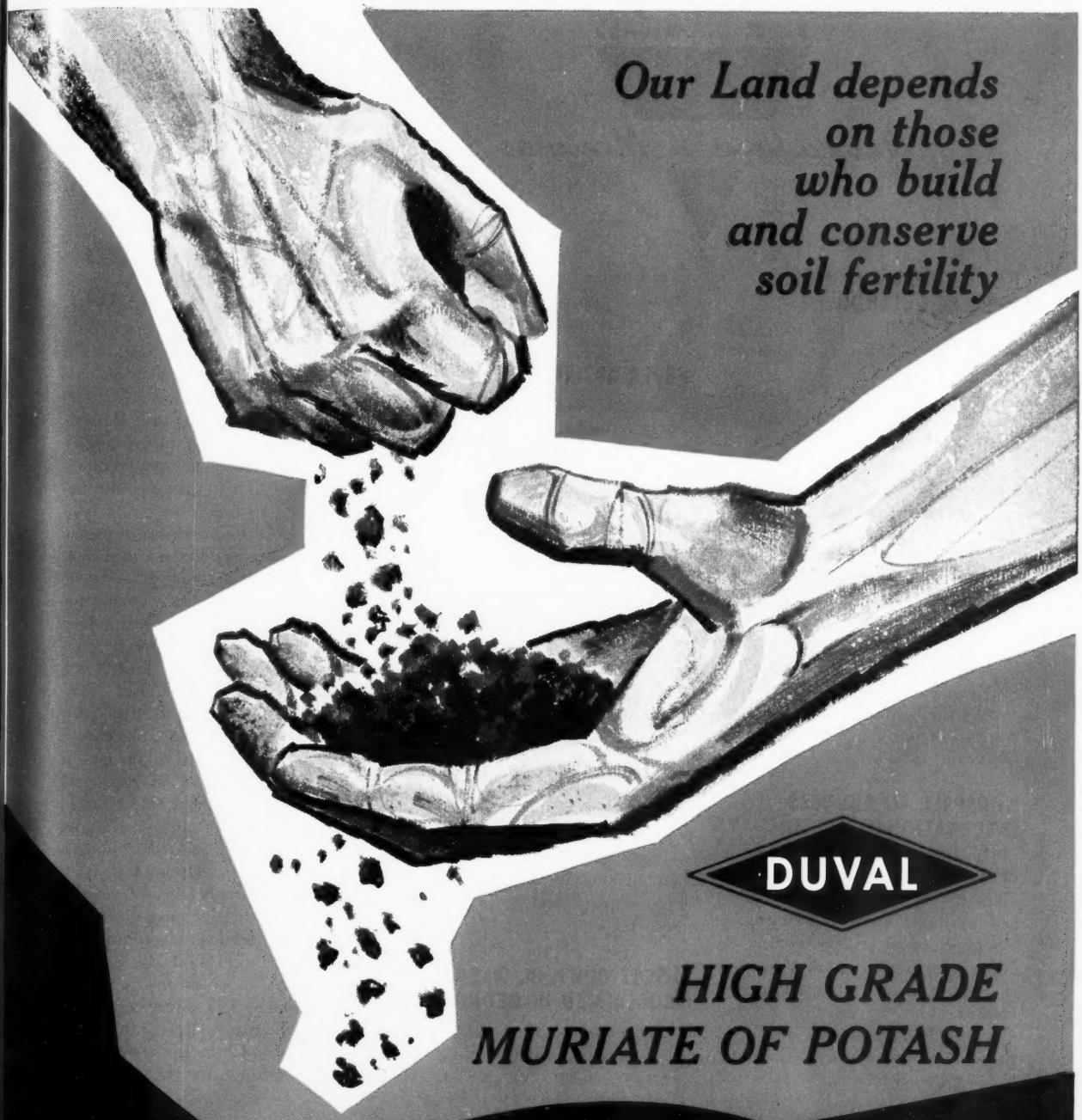
Velsicol Chemical Corp. A. B. Chadwick has been appointed director of manufacturing. Since obtaining his BS in chemical engineering from Lehigh University in 1939 he has worked in supervisory and executive chemical manufacturing positions with Allied Chemical & Dye Corp., Pennsylvania Coal Products Co. and Koppers Co., Inc.

Chadwick

Western Phosphates, Inc. George H. Reid succeeds E. R. Scammell as plant manager; James A. Malloch has been promoted from maintenance superintendent to chief engineer.

Westvaco Chlor-Alkali Div., Food Machinery & Chemical Corp. Robert J. DeLargey has been named assistant division manager, operations. He will have direct charge of the division's production, research, and development activities.

DeLargey



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NEMATODE WORKSHOP HELD IN ORLANDO

About 1,200 people were expected to attend a workshop meeting in Orlando, Fla., Aug. 21 and 22, on damage caused in Florida by nematodes. E. E. Heuermann, Atlanta district manager of Shell Chemical Corp.'s Agricultural Chemical Div., sponsor of the meeting, expected the group to include county agents, representatives of industry companies, in addition to farmers, growers and nurserymen.

The workshop staff included ten agriculturalists from the University of Florida, four from the Florida State Plant Board and three from USDA. Their reports covered citrus, vegetables, nursery stock and tobacco.

HORSFALL TO ADDRESS INTERNATIONAL MEETING

Dr. James G. Horsfall, director of the Connecticut Agricultural Experiment Station, will participate in the Fourth International Congress of Crop Protection in Hamburg, Germany, this month.

In addition to serving as Section chairman at a session of the Congress on Sept. 12, he will present a paper on "Assaying Foliage Protection in the Laboratory." Saul Rich of the Connecticut Station and Harry L. Keil, Rohm & Haas Co., are co-authors with Dr. Horsfall.

PNPFA ACTIVITIES

Norval Johnson has been picked as the outstanding student in Soils at Washington State College and awarded a $100 scholarship by the Pacific Northwest Plant Food Association, reports Leon S. Jackson, secretary. Oregon State College winner was David Dulin.

The group's soil testing program now is underway. At dealer meetings held during July in Ephrata, Ellensburg, Seattle, Mt. Vernon and Vancouver, Wash., Grant Braun, Lowell Nelson and Frank Taylor told dealers present how they could participate in the program. Concurrent with the association's program, U. S. Borax contributed $750 for boron tests in Washington state.

Site for the PNPFA annual convention will be Sun Valley, on October 3, 4 and 5, Jackson announced.

INSECT CONTROL WEEK PROCLAIMED IN GEORGIA

August 18 to 24 was celebrated as "Insect Control Week" in Georgia, according to E. E. Heuermann, Atlanta district manager of Shell Chemical Corp., who headed up the week for the Georgia Entomological Society.

Gov. Martin E. Griffin's proclamation of the week was intended to help spotlight the great loss insects cause annually in Georgia and to promote measures which would reduce this loss.

MEETING WITH FERTILIZER INDUSTRY AT CORNELL

According to Cornell test results, it doesn't pay to apply nitrogen to the soils in the fall for spring-planted crops such as oats or corn, Dr. Nyle C. Brady, head of Cornell's agronomy department, reported at a meeting with representatives of the fertilizer industry. This is significant because the Cornell results are contrary to those reported in some areas of the south and midwest. Dr. Brady said the Cornell tests have been consistent in test runs over six years. Four hundred fertilizer tests have been conducted in farmers' fields on grasses, small grains and corn. Prof. William C. Kelly called for better machinery for placement of fertilizer. He said placement is as important as analysis and contended that machinery used by many growers can't do the job.

Kelly, along with agronomist E. C. Dunkle and pomologist Elwood Fisher reported on Cornell's expanded soil test programs and the 1957 fertilizer recommendations. Dunkle said the Cornell laboratory now is testing more than 30,000 soil samples a year.

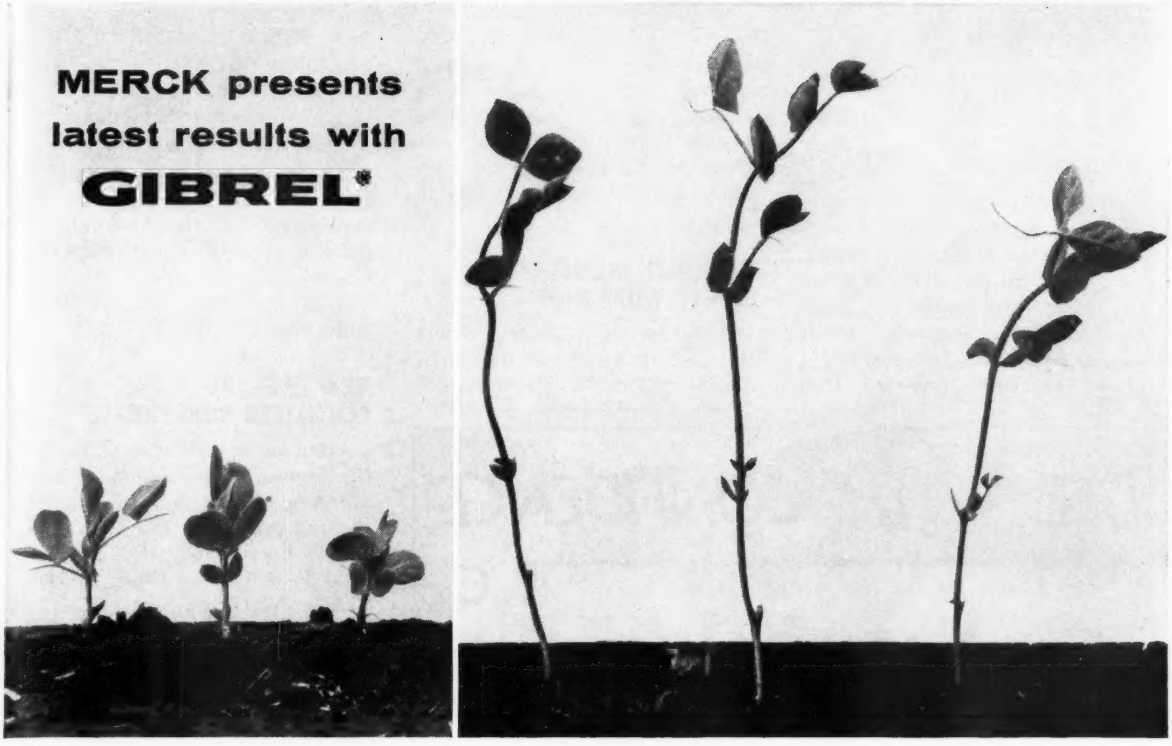
At the Aurora Research Farm, fertilizer and lime representatives heard agronomist Dr. Richard

(*Continued on page 22*)

FERTILIZER SAFETY EXEC. COMMITTEE

Here are members of the Executive Committee of the Fertilizer Section, National Safety Council who met in June to discuss activities of the section. Seated, left to right, are: A. L. Raney and Dave Anstine, Phillips Chemical Co.; Tom Clarke, G.L.F. Soil Building Serv.; John Kato, NSC; G. L. Pelton, Smith Agr. Chem. Co.; E. O. Burroughs, Jr., F. S. Royster Guano; G. L. Dietz, Fert. Mfg. Coop., Inc.; Mike Ellison, Mississippi Chem. Co.; S. Cottrell, Olin-Mathieson; Vernon Gornto, Smith-Douglass; and O. E. Perry, C. O. Smith Guano Co. Standing: Wayne High, Baugh Chemical Co.; Elmer Perrine, Allied Chem. & Dye; Grayson Morris, Southern States Coop.; J. R. Terry, Davison Chemical; J. S. Mark, Farm Bureau Coop Assn.; R. E. Kelly, Swift & Co.; C. A. Cox, Virginia-Carolina; and W. C. Creel, N. Carolina Labor Dept.

MERCK presents latest results with GIBREL*



Alaska pea seedlings from untreated seeds are too small to cultivate, too short to shade weeds.

Seed treatment with GIBREL brought seedlings up three days earlier, made them grow tall above weeds.

New GIBREL Seed Treatment Accelerates Early Growth

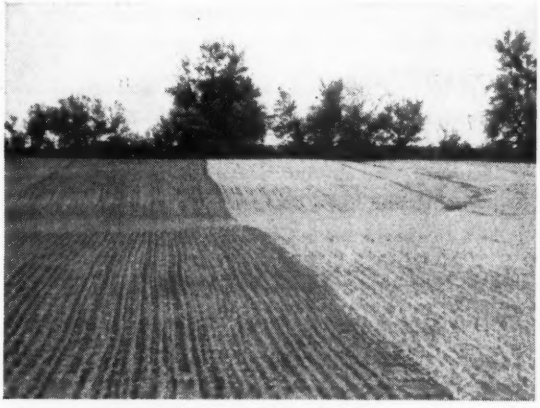
The Merck experimental program for GIBREL is now in full swing, building a solid foundation for the future possible uses of this new plant growth stimulant. Carefully controlled Merck-sponsored studies in important crop-growing areas across the country indicate promising results from seed treatment with GIBREL. Peas, beans, soybeans, cotton and sugar beets all show good response when seeds are treated with a slurry of GIBREL.

According to all reports, seed treatment with GIBREL causes a prompt and uniform emergence, excellent stand and increased growth of seedlings. Practical benefits include faster emergence, making plants come up before weeds. In many cases treated seeds may be planted earlier and crops marketed sooner since plants respond to GIBREL even in cold, wet soils and with low temperatures.

Although these uses look promising, specific recommendations for use of GIBREL in food and feed crops will be published when complete experimental data are available.

*GIBREL is the Merck trademark for gibberellin plant growth substance.

Keep up to date with news about GIBREL *by looking first to* MERCK, *pioneers in gibberellin research and production.*



Comparison of Alaska pea growth three weeks after a cold, wet spring planting. Treatment with GIBREL (½ pt. medium strength slurry per 100 lbs. seeds) caused seedlings at right to emerge faster, have better stand than control seedlings at left. Photo taken at DeForest, Wis. trial fields of the Oconomowoc Canning Company.

GIBREL—a product of MERCK

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FARM CHEMICALS

— Associations & Meetings —

(Continued from page 21)

Bradfield describe Cornell's long-term "maximum yield experiment." One objective, he said, is to compare the yields of crops in a six-year rotation under "normal" practices with yields under "optimum" treatment.

Dr. Bradfield reported that there has been no increase in corn yields even when three times the normal amount of fertilizer was applied, without irrigation. But, he added, corn yields shot up 40 bushels for three straight years when four inches of water were added with the additional fertilizer.

CHEMICAL INDUSTRY SAFETY WORKSHOP

A Chemical Industry Safety Workshop sponsored by the Manufacturing Chemists' Association is scheduled for Philadelphia, Sept. 20. Members of the MCA general safety committee will discuss mutual and individual problems with plant safety officials of the Greater Delaware Area.

Said to be first of its particular kind, the workshop is part of a continuing program formulated by the committee. George L. Gorbell of Monsanto Chemical Co. is chairman of the MCA general safety committee.

NEW ENGLAND FERTILIZER CONFERENCE

Plans have been completed for the annual New England Fertilizer Conference, to be held under the auspices of the National Plant Food Institute, at the Bald Peak Colony Club, Melvin Village, N. H., on Sept. 25.

The sessions will feature an appraisal and analysis of factors influencing Northeast fertilizer-using practices, based on a survey conducted for the Institute by National Analysts, Inc.

Dr. Mason H. Campbell, dean of the College of Agriculture and director of Experiment Stations at the University of Rhode Island, will preside and open the conference with an address of welcome. Vice President W. R. Allstetter will present greetings from NPFI.

Dr. M. S. Williams, NPFI chief agricultural economist, will report on "Factors Influencing the Use of Fertilizers in the Northeast." Following, an appraisal of factors influencing the use of fertilizers will be presented by H. R. Mitiguy, agricultural economist, Federal Reserve Bank of Boston; H. M. Hansen, associate director of extension, Univ. of Conn., and Dr. D. H. Seiling, dean, College, of Agriculture, Univ. of Mass.

In the afternoon, three agricultural authorities will discuss the use of the National Analysts survey as applied to New England. Allstetter will discuss the Institute's plans for using the results of the survey.

Louis Webster, director of the Div. of Markets, Massachusetts Dept. of Agriculture, will be the banquet speaker and Edward R. Jones, member of the NPFI board of directors, will preside.

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"Thiokol" synthetic rubber is a product containing a high percentage of Sulphur—its name being derived from the Greek words for sulphur and glue. Here is another example of the continually broadening field in which Sulphur is an important and necessary element.

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2 Is your bag properly constructed for your product?
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4 Is the total cost of your bag out of proportion to the selling price of your product?
5 Does your product cost warrant redesigning your bag to merchandise your product more effectively?
6 Are you using the most economical filling machine available for packaging?
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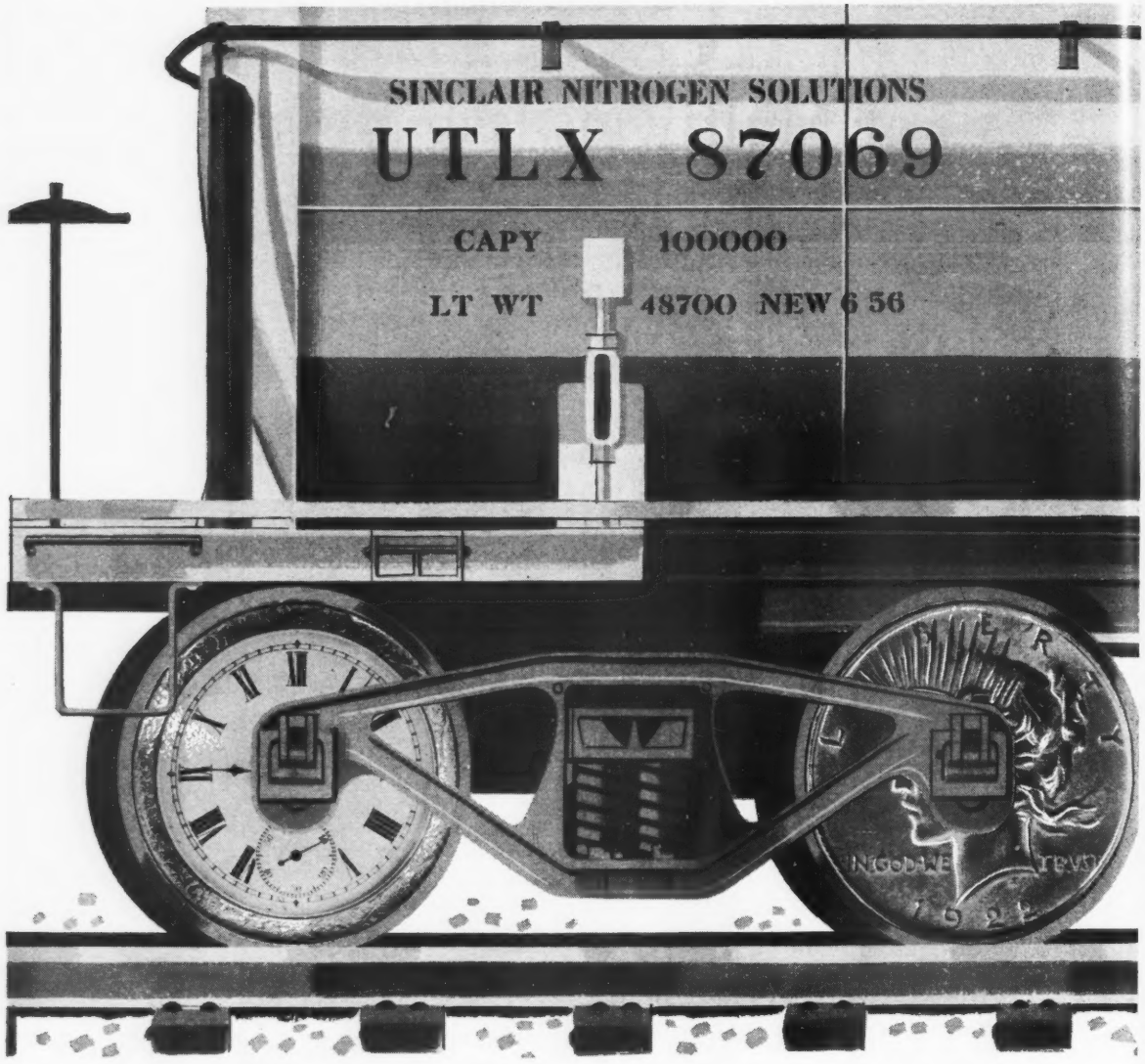
CITY_____

PRODUCT MFD._____ NAME_____



How Rapid Delivery of Sinclair Nitrogen Products

CAN SAVE YOU TIME AND MONEY

Rapid—on-time—delivery to your plant is an important reason why you should order nitrogen supplies from Sinclair. It can make the difference between filling an order at a profit or losing a sale and customer good will.

A big, new nitrogen plant at Hammond, Indiana, is in the center of the nation's rail and truck transportation network. Large storage facilities in this key location mean that your order can be filled for fast delivery when you need it.

For fast, low-cost delivery of nitrogen solutions, anhydrous ammonia and aqua ammonia call on Sinclair. Write or phone . . .

Dino, the Sinclair Dinosaur, says,

"Fertilize for greater farm profits. That's what I tell 'em in the farm ads, too".

SINCLAIR CHEMICALS, INC.

(Affiliate of Sinclair Refining Company)

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VIEWING WASHINGTON

with Farm Chemicals Washington Bureau

on agriculture

The federal government is about to become more firm in its opposition to artificial price aids to farmers. Opposition until now--as expressed by Secretary Benson--has been mostly a matter of principle. Idea was that farmers should do more, and government less, to bring stability to the agricultural economy. The opposition to government price stimulants now has become almost completely a matter of necessity. The reason for the shift in emphasis is current spiralling inflation.

Inflation over the past 6 years has been the cause of the terrific farm price-cost squeeze. While farm prices dropped 30 per cent between 1951 and 1956, the price of industrially produced goods making up the cost of living has increased steadily. Falling farm prices offset rising industrial prices and the cost for such things as transportation, medical care, and housing, so inflation was checked temporarily. One top federal economist told FARM CHEMICALS that if farm prices had followed the same upward trend of other prices, the nation now might have been in the grips of an economic bust--rather than a general boom.

What worries the economists now is that since early 1956, the Labor Department's cost of living index, a measure of inflation, has soared to new records almost every passing month. The new inflationary rise dates to the time when retail prices of food started moving up along with prices of other goods in the cost of living index. But while farm prices have gone up only slightly since 1956, the big reason officials give for higher food costs is the rising cost of marketing food.

Government forecasts are for continuing price rises for almost everything people need for living. Marketing costs for food also are expected to keep rising. And, the economists point out, if farm prices also rise along with everything else, the nation's economy may for sure be put in extreme danger of a bust. Thus, the government will continue not only to oppose higher price supports but will press for less effective price stimulants in agriculture.

The 1958 Soil Bank acreage reserve will be sharply different from the current program, according to recent USDA announcements. Two major changes have been made--creation of a "Soil Bank base," and a limit of $3,000 on payments to any one producer under the acreage reserve. The payment limit applies even if farmers put acreage of more than one basic commodity into the reserve. The conservation reserve limit continues at $5,000--so the maximum payment possible to a single farmer would be $8,000 if he participated in both reserves. This year, payments in the acreage reserve alone ranged as high as $200,000.

The "Soil Bank base" set up for the first time next year equals

VIEWING WASHINGTON

agriculture Continued

the average acreage farmers had in cultivation in 1956 and 1957 in all cash crops, except hay. Crops covered include such feed grains, annual grasses cut for seed, oilseeds, cowpeas, potatoes, commercial vegetables, field and canning peas and beans, and so on. In order to get acreage reserve payments, a farmer can only harvest acreage of all crops equal to his base acreage total minus land he put into the acreage reserve. If a farmer harvests more than the "permitted acreage" he not only loses the acreage reserve payment, but will be subject to a cash penalty amounting to half the payment he would have received had he complied with the rules. Note: The acreage reserve is intended to make make short-range reductions in the "basic" crops of cotton, corn, wheat, rice and tobacco. The conservation reserve is designed to encourage farmers to take other crops out of production and substitute conservation practices.

The country's newest and potentially largest farm organization, the National Conference of Commodity Organizations, is preparing an omnibus farm bill to be presented to Congress next winter. The NCCO was founded in Washington last spring on the theory that the many independent farm commodity groups throughout the country could do a better job of representing farmers in Congress than the general organizations. NCCO will attempt to solve the farm problem by evolving programs strictly on a commodity-by-commodity basis --rather than lumping all commodities into one big program.

NCCO has developed two broad aims applicable to all crops--aims which will be over and above single commodity programs. One of these is greater protection for domestic markets against foreign imports. The second aim is to get a new base for the parity formula. A "realistic" parity base--against which the farmers' relative economic position is measured--is 1947-49, according to NCCO. This is the same base used in government indices measuring the relative position of industrial labor wages. A shift to the more recent years, from the current 1910-14 base, would result in an 8 per cent increase in parity for the farmer. Net effect would be to increase price support levels.

The 1958 Agricultural Conservation Program (ACP) now has been finalized by the Agriculture Department. After failing in a desperate effort to change the program drastically, the USDA bowed to the demands of Congress and held it unchanged from this year.

USDA officials, however, concede privately that they will present Congress next winter with a formal request to make big changes in the 1959 program. One of the major changes to be sought is reducing the government's share in the cost of ACP practices from the current maximum of 80 per cent to a top of 65 per cent. It also wants to reduce the government's share in liming practices from 65 to 50 per cent.

BIG LOADER MANEUVERS LIKE SMALL LOADER

in Midwest fertilizer plant

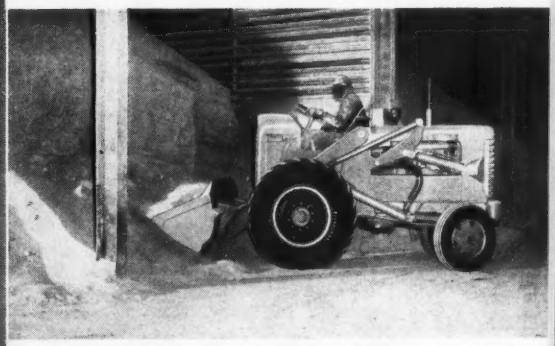
NO LOST TIME JOCKEYING AROUND Operator makes a right angle turn directly into bin from aisle. In fact, he can turn from a nine-foot aisle into a ten-foot bin! Made possible by bucket-over-drive-wheels design and small steering wheels in rear. This design means better traction and easier steering, too. In addition, power steering is now standard equipment!

The TL-10 is a BIG PRODUCER on both inside and outside materials handling. Let your Allis-Chalmers construction machinery dealer show you its maneuvering and load-getting advantages. See why

TRACTO *is a sure sign of modern design*

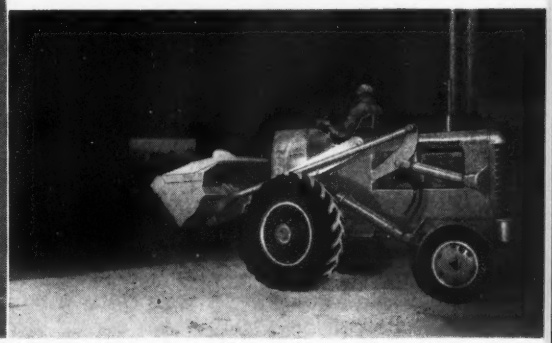
TRACTOMOTIVE TL-10 TRACTO LOADER®

combines big-capacity bucket (1¼-cu yd, heaped) with short, 11-foot turning radius . . . and the load-getting advantages of a tip-back bucket and hydraulic torque converter drive.



NO RUNNING ROOM NEEDED TO LOAD Instead of ramming or butting, operator just eases bucket into material and the hydraulic torque converter drive smoothly crowds in a heaping load. There is a scooping action, too, with the tip-back bucket. Operator has a full load before the booms are halfway up!

NO LOST TIME DELIVERING LOAD Operator just pulls a lever and he backs from the pile "on the double." Reverse is almost twice as fast as forward! He gets into travel position easily, quickly with power steering and short, 11-foot turning radius. Visibility and stability are excellent because the tip-back bucket enables operator to carry load low, close to cowl.



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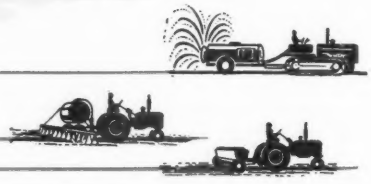
COPPER



The Versatile Fungicide

Is there another Fungicide offering these advantages?

You get so many more advantages with Copper fungicides—used as a spray or dust on practically all truck crops in the control of persistent fungus diseases—Tri-Basic provides control of citrus and grape diseases, also on many decidious fruits—Tri-Basic has excellent adherence qualities and protects longer—lower disease control cost—greater yield of top quality produce.

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TRI-BASIC COPPER SULFATE

Quality Controlled from Mine to Finished Product

For further information please make requests on your company's letterhead.

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Arcadian® News

Volume 2 — For Manufacturers of Mixed Fertilizers — Number 9

Nitrogen Division Advertising Helps Sell

MIXED FERTILIZERS

The poster pictured below is the opening gun in the big, powerful 1957-58 advertising campaign now being conducted by Nitrogen Division, Allied Chemical, to help you sell mixed fertilizers. Big posters similar to this in full color are now appearing on hundreds of billboards in leading farming areas.

These posters urge farmers to buy their plant foods in the form of mixed fertilizers. THE BEST FERTILIZERS ARE MIXED FERTILIZERS is the theme of this campaign.

Mixed fertilizers offer many advantages to the farmer. They save time, labor and money and pay big profits on the investment. They overcome the difficulty of using separate materials and lessen the hazard of mis-use. Mixed fertilizers are practical interpretations of official recommendations. The right mixed fertilizer is like a professional prescription to fit the exact needs of the crop and the soil.

Mixed fertilizers are manufactured in many different analyses and combinations of major plant foods plus secondary plant foods and minor elements. Various carriers of plant foods are used to adapt fertilizers to particular needs. All of this represents an enormous savings to the farmer in work, worry and expense.

Mixed fertilizers are farm efficiency in a bag. They help the farmer to make one acre do the work of two or more. They enable him to do the entire job of plant feeding with one trip across his field. Supplemental individual plant foods are needed under certain conditions but for most crops and soils *the best fertilizers are mixed fertilizers.*

Nitrogen Division, Allied Chemical, produces and sells nitrogen. But Nitrogen Division has always aggressively supported the importance of using nitrogen in a balanced fertilizer program. We will keep you posted on our continuing efforts to help you sell mixed fertilizers as this campaign unfolds. In the meantime, we will appreciate your comments and suggestions. Just write: Nitrogen Division, Allied Chemical, 40 Rector Street, New York 6, N. Y.

Full-color reproductions of this billboard in small size (30 inches long) are available for use as wall posters or window streamers by you and your dealers, without charge or obligation. Just request quantity you desire from Nitrogen Division, Allied Chemical, 40 Rector Street, New York 6, N.Y.

TONNAGE OPPORTUNITIES

27 MILLION FALL CUSTOMERS

Get Your Share of this Big Market with Fertilizers Containing N-dure® Solution

A recent survey indicates that home owners—27 million of them—now buy about one 80-pound bag of fertilizer per family per year, out of an annual $30 expenditure for lawn and garden supplies. And their tendency is to use more—when they can get a mixed plant food that is easy to apply, and one that makes grass and gardens thrive through the year on only one or two applications.

Early fall, the time for lawn fertilization, represents an important part of this growing market. It will pay you to get your share of these sales. You can do it with mixed fertilizers containing *enduring* nitrogen. One bag of fertilizer per customer looks like a small sale. If your farm customers each use just one extra bag of fertilizer, you can hardly notice the difference. If the home owners in your market area each use an extra bag of fertilizer, the market is doubled!

Each year more and more home owners are trying to improve their lawns with fertilizer. They may not produce the "show place" of the neighborhood, but they do want their lawn to "look nice." The fertilizer you sell them can do this job easily, when you make mixed fertilizer containing enduring nitrogen.

Home owners want good grass but they won't bother to fertilize turf every few weeks, as golf greenskeepers used to do. But give them mixed fertilizers with enduring nitrogen—fertilizer to spread only twice a year—and they will buy it and spread it.

As you know, specialty fertilizers containing enduring nitrogen are making a big hit with nurserymen, golf clubs, groundskeepers and other large-scale growers of turf and ornamental plants. But the biggest market of all is the home lawn owner. For all these markets, you have a new, easy way to make mixed fertilizers with enduring nitrogen.

Use N-dure Solution

Use N-dure urea-formaldehyde solution and urea in your regular fertilizer-mixing operation. This combination enables you to produce good-condition mixed goods in which the nitrogen as well as the phosphate and potash will feed lawns and plants steadily for months after a single application.

N-dure enables you to make semi-granular, non-segregating, non-burning mixed fertilizers with your present equipment. Nitrogen Division research has shown the way. By using N-dure solution and urea, you produce ureaform nitrogen during the process of manufacturing a chemically-controlled mixed fertilizer. And you produce this lasting, good-condition product at low cost.

Fall is the ideal time to fertilize turf and other ornamentals. The growers of turf grass want fertilizer that they need to apply only once or twice a year. They want fertilizer that doesn't burn plants, that doesn't leach, and that spreads easily without lumps and without dust. You can make it with your standard ammoniating apparatus, in a wide variety of plant food ratios. Now is the time to produce for this profitable fall market!

For full information on how N-dure can help you make money, write to Nitrogen Division, Allied Chemical, 40 Rector Street, New York 6, N. Y.

Arcadian News for Fertilizer Manufacturers . . . . . from NITROGEN DIVISION

IT PAYS TO CHECK YOUR PLANT OPERATION TO Cut Costs and Improve Output

CALL NITROGEN DIVISION TECHNICAL SERVICE!

Before you settle on your manufacturing procedures for the coming season, it will pay you to double check every method, material and piece of equipment in your plant.

Experience shows that profits often depend on giving careful attention to obvious details as well as the more complex and challenging manufacturing problems. Fertilizer men at a recent meeting were amazed when a badly-corroded mixer pipe, brought in from a plant operated by a member of the group, was displayed to them. The pipe had been used for introducing solutions into a batch mixer. It was so worn that a number of holes had merged and become a wide-open slot that wasted materials and built up hot spots in the mix. A subsequent check at plants represented by men at the meeting showed several more badly corroded pipes in use.

90% of Calls are Helpful

It doesn't take a call from a Nitrogen Division technical service man to find so obvious and simple an operational fault. But nine times out of ten, a technical service call *does* provide some definite improvement—like cutting costs, turning out a higher-quality product, or changing materials to speed and better a mixing operation.

One of the best ways to pare down costs is to use the nitrogen solutions and other ingredients that are specifically adapted to the fertilizers you produce. For example, during one service call that involved checking mixing operations, a manufacturer found he could double his ammoniation rate. Use of a greater amount of *the proper nitrogen solution* was required, and this greatly reduced the cost of nitrogen in the fertilizer.

In another situation, Nitrogen Division technical service helped cut down fumes produced in making a pulverized fertilizer, without reducing use of a volatile solution. Here again, the process was adapted to utilize more of the solution and turn out a better-conditioned product with a lower total cost of meeting nitrogen guarantee.

Nitrogen Division does more than provide the largest complete line of straight nitrogen carriers, including solutions, anhydrous ammonia and dry nitrogen carriers. The organization's hundreds of research and technical men supply a complete working knowledge of best procedures for formulating pulverized or granular goods in all kinds of equipment. They are continuing to develop new materials for improving mixed-goods manufacture. Granular fertilizer manufacture is relatively new, but Nitrogen Division already has a background of 20 years of intensive experience in providing nitrogen materials that simplify production of high-quality granular fertilizers.

Along with the newest materials and methods, Nitrogen Division continues to adapt proved procedures and operating techniques to save on raw material costs, and to improve fertilizer condition. Whether your plant is small or large, whether you use continuous or rotary mixers—or older equipment, Nitrogen Division materials and methods are developed to help you make greater sales and more profits.

Ask the Nitrogen Division technical man to assist you in making a thorough survey of your equipment, your methods of ammoniation and your use of materials. This is a sure way to save on basic operating costs. For skilled, prompt technical service, free to customers, contact Nitrogen Division, Allied Chemical, 40 Rector Street, New York 6, N. Y.

Proper selection of the correct nitrogen solution can increase your profits

Farm Fertilizer Survey Results

A new and intensive survey to determine motivations that influence farmers' fertilizer buying habits has been recently completed by an independent research organization employed by Nitrogen Division, Allied Chemical, and results are now being compiled.

Based on a major series of scientifically-designed personal interviews conducted on farms during the present growing season, the "depth study" is expected to reveal significant new information never before available to the fertilizer industry.

The survey was constructed to produce an analysis of the many motives and factors that affect a farmer's decisions to buy fertilizers. Statistical data on what growers now buy compared to purchases in previous years is also being tabulated.

Considerable new information is expected to emerge from the survey concerning agricultural areas where fertilizers are used and how they are applied. Other results will correlate farm size and crop patterns with the kinds of plant food purchased.

Watch for further information about results of this important fertilizer survey in future issues of *ARCADIAN® News.*

NITROGEN *plus* SERVICE

There are many reasons why it pays you to deal with Nitrogen Division, Allied Chemical. You are served by America's leading producer of the most complete line of nitrogen products. You benefit from millions of tons of nitrogen experience and the enterprising research that originated and developed nitrogen solutions for the fertilizer industry. You are assured of dependable supplies from three huge plants at Hopewell, Ironton, and Omaha. Your nitrogen is delivered to you by the best transportation facilities and equipment. You get technical assistance and formulation advice from the largest and most efficient staff of nitrogen experts. Your sales are supported by the most powerful advertising campaign ever conducted to sell fertilizers. Nitrogen Division is your headquarters for NITROGEN *plus* SERVICE. Look over the big line and contact one of the 14 offices listed below.

Arcadian® Nitrogen Solutions

	CHEMICAL COMPOSITION %					PHYSICAL PROPERTIES		
	Total Nitrogen	Anhydrous Ammonia	Ammonium Nitrate	Urea	Water	Approx. Sp. Grav. at 60°F	Approx. Vap. Press. at 104°F per Sq. In. Gauge	Approx. Temp. at Which Salt Begins to Crystallize °F
NITRANA®								
2	41.0	22.2	65.0	—	12.8	1.137	10	21
2M	44.0	23.8	69.8	—	6.4	1.147	18	26
3	41.0	26.3	55.5	—	18.2	1.079	17	-25
3M	44.0	28.0	60.0	—	12.0	1.083	25	-36
3MC	47.0	29.7	64.5	—	5.8	1.089	34	-30
4	37.0	16.6	66.8	—	16.6	1.188	1	56
4M	41.0	19.0	72.5	—	8.5	1.194	7	61
6	49.0	34.0	60.0	—	6.0	1.052	48	-52
7	45.0	25.3	69.2	—	5.5	1.134	22	1
URANA®								
10	44.4	24.5	56.0	10.0	9.5	1.108	22	-15
11	41.0	19.0	58.0	11.0	12.0	1.162	10	7
12	44.4	26.0	50.0	12.0	12.0	1.081	25	- 7
13	49.0	33.0	45.1	13.0	8.9	1.033	51	-17
15	44.0	28.0	40.0	15.0	17.0	1.052	29	1
U-A-S®								
A	45.4	36.8	—	32.5	30.7	0.925	57	16
B	45.3	30.6	—	43.1	26.3	0.972	48	46
Anhydrous Ammonia	82.2	99.9	—	—	—	0.618	211	—

Other ARCADIAN® Nitrogen Products: UREA 45 • A-N-L® Nitrogen Fertilizer
Ammonium Nitrate • American Nitrate of Soda • Sulphate of Ammonia

NITROGEN DIVISION Allied Chemical & Dye Corporation

MAIN OFFICE: 40 Rector Street, New York 6, N. Y., Phone: Hanover 2-7300

Branch Offices	Phone
Hopewell, Va., P. O. Drawer 131	Cedar 9-6301
Ironton, Ohio, P. O. Box 98	Ironton 8-4366
Omaha 7, Neb., P. O. Box 166	Bellevue 1464
Raleigh, N. C., 16 W. Martin St.	Temple 3-2801
Columbia 1, S. C., 1203 Gervais St.	Columbia 3-6676
Atlanta 3, Ga., 127 Peachtree St., N. E.	Jackson 2-7805
Memphis 9, Tenn., 1929-B South 3rd St.	Whitehall 8-2692
Columbia, Mo., P. O. Box 188	Gibson 2-4040
Indianapolis 20, Ind., 6060 College Ave.	Clifford 5-5443
Kalamazoo, Mich., P. O. Box 869	Kalamazoo 5-8676
St. Paul 4, Minn., 45 N. Snelling Ave.	Midway 5-2864
Los Angeles 5, Cal., 2999 West 6th St.	Dunkirk 8-3201
San Francisco 4, Cal., 235 Montgomery St.	Yukon 2-6840

Chemicals

246—MICRO-CEL

Micro-Cel, according to Johns-Manville, is the powder that "flows like a liquid"—reduces caking, increases flowability and gives more uniform coverage with dry dusts. For more free information on Micro-Cel just

CIRCLE 246 ON SERVICE CARD

247—URETHANE

There's a "growing interest" in urethane in the field of agricultural chemicals according to the Food Machinery & Chemical Corp.

A technical bulletin on urethane (ethyl carbamate) is available free from the organic chemicals division. For your copy just

CIRCLE 247 ON SERVICE CARD

248—PENCO BULLETIN

Penco Sodium Pentachlorophenate Technical is an effective pre-emergence weed killer, soil sterilant and algacide and helps prevent termite damage, reports Pennsalt of Washington in a new technical bulletin. Information is included on its physical properties, as well as formulating data and recommended uses.

For your copy,

CIRCLE 248 ON SERVICE CARD

249—ATTACLAY

Pesticide producers with product lines that range up to sixty and more mixtures make substantial savings through "across-the-board" use of Attaclay as carrier and diluent, according to its manufacturer. Attaclay can be used in dust bases, wettable powders, and finished dusts.

Minerals & Chemicals Corporation of America has available detailed "agchem" literature which may be obtained, free of charge, by

CIRCLING 249 ON SERVICE CARD

How to use the

READER SERVICE CARD

- **Circle number of literature you want.**
- **Print or type your name, position, company and address.**
- **Clip and mail the Service Card.**

FREE INFORMATION to help you solve fertilizer, pesticide problems

Reader Service

250—DuPONT URAMON

DuPont "Uramon" Ammonia Liquors give you maximum safety in high-temperature granulating by eliminating dangerous flash fires in the mixer; and, further, by assuring safety in the pile. These are two of the important advantages DuPont claims for its "Uramon" Ammonia Liquors. For free information on the solution best suited to your use, just

CIRCLE 250 ON SERVICE CARD

251—CHEM-BAM

According to Chemical Insecticide Corp. not even rain or watering can wash away Chem-Bam, the blight fighter which contains the exclusive sticking agent U-101. CIC has an informative booklet available on blight control. A copy can be yours, free! Just

CIRCLE 251 ON SERVICE CARD

252—NEW PHOSPHATE PESTICIDE

Hercules Powder Company announces a new agricultural pesticide which will destroy the eggs of mites as well as adults. This new phosphate pesticide, soon to be available in dusts or sprays, is Delnav. Additional information on this new product can be obtained by

CIRCLING 252 ON SERVICE CARD

253—VERSENOL IRON CHELATE

Put new growing power right in your liquid or dry fertilizer with Versenol Iron Chelate, a product of Dow Chemical Company. To get latest literature and complete information, just

CIRCLE 253 ON SERVICE CARD

254—PENOLA HAN

Low Cost—High Solvency. Penola HAN heavy aromatic naphtha blends readily with active ingredients to form efficient, top-quality pesticide concentrates. Less plant toxicity and better consumer acceptance are insured by its mild odor, light color and high volatility, Penola reports.

For free information on how Penola HAN can improve *your* product just

CIRCLE 254 ON SERVICE CARD

255—VELSICOL GIBBERELLINS

Velsicol Gibberellins can expand your business into a "growing" market with a very high sales potential, the manufacturer states. Free formulation data and bulletin summarizing previous test information on this amazing new plant growth stimulant are now available from Velsicol Chem. Corp. Just

CIRCLE 255 ON SERVICE CARD

256—ZEOLEX 7A

A pesticide carrier for concentrates and wettable powders, Zeolex 7A gives added advantages over other silica and silicate carriers, reports J. M. Huber Corporation. A detailed report on this "new" pesticide carrier for wettable powders is contained in a technical service bulletin.

To obtain your free copy just

CIRCLE 256 ON SERVICE CARD

Process Equipt.

257—CONVEYOR IDLER

The Joy Limberoller conveyor idler resists dust, abrasion and corrosion, reports Joy Mfg. Co., and its flexing action keeps it free of material buildup. Joy says the idler has proved extremely effective in handling triple superphosphate, ammonium sulfate and sticky fertilizers. You can get details by

CIRCLING 257 ON SERVICE CARD

258—EXTENDING COOLING TOWER LIFE

Milton Roy Co. has released a new Application Engineering Data Sheet which tells of several methods of combating corrosion and delignification in cooling towers, using controlled volume pumps to meter precise quantities of chemicals to cooling water.

The data sheet features complete details and drawings explaining continuous *p*H control using Mersemetric pumps, acid metered in proportion to flow rate, chemical feed with automatic level control and other low-cost cooling tower water treating systems. If you'd like a copy

CIRCLE 258 ON SERVICE CARD

259—NEW ROTAIRCOOL BULLETIN OFFERED

Latest in a series of bulletins on pelleting equipment has just been released by Sprout-Waldron. The two-color, four-page brochure gives all the information about the Rotaircool Pellet Cooler and Dryer with Conveying System. All details are shown on a scale drawing, and the bulletin also explains how the Rotaircool may be used as part of a complete Sprout-Waldron cooling and drying, crumblizing, cleaning and grading system. A copy is yours if you

CIRCLE 259 ON SERVICE CARD

260—1957 STURTEVANT MILL CATALOG

Sturtevant Mill Co. has published a 1957 eight-page Dry Processing Equipment Catalog, in which air separators and their use in closed circuit grinding, Micronizer fluid energy mills grinding and rotary batch blenders are described in detail.

Information on fertilizer machinery also is given. A free copy is yours by

CIRCLING 260 ON SERVICE CARD

Packaging

261—AEROSOLS BOOKLET

Continental Can Co. has just completed a new informational brochure, "Aerosols," which reviews the history and growth of aerosols, surveys the market and product field, outlines Continental's facilities and services, and provides a listing of contract fillers, valve manufacturers and other aerosol industry suppliers.

Copies are available free. Just

CIRCLE 261 ON SERVICE CARD

262—VULCAN DRUMS

In addition to its complete line of steel pails and tin plate cans, Vulcan Containers Inc. says that it now is producing drums. For free information on Vulcan drums and how the company can fill your needs,

CIRCLE 262 ON SERVICE CARD

263—LITERATURE ON PNEUMATIC CONVEYING

A new bulletin issued by Spencer Turbine Co. tells all about the company's stationary and portable pneumatic conveying systems. The systems cover a capacity range from 3/4 through 10 tons per hour; vacuum producers from 5 through 75 hp. and hose or pipe sizes from 2" through 7". Specific information is provided on size of unit, rate of conveying, type and weight of material. For your copy,

CIRCLE 263 ON SERVICE CARD

Miscellaneous

264—DATA PROCESSING

"A Practical Data System for the Process Industries" is the title of a new brochure from Beckman Instruments, Inc. Describing the Beckman Model 112 Data Processing System, the eight-page booklet outlines the economics of data processing in the present day well-instrumentated plant. A copy can be had by

CIRCLING 264 ON SERVICE CARD

265—BOSTON SPRAY HOSE

There's free descriptive literature available from Boston Woven Hose & Rubber Co. on its new line of Boston spray hose. The line includes hose for high pressure and medium pressure service, as well as low pressure applications. The company says its low pressure hose will handle all types of herbicides or insecticides. For your copy of the literature, which includes all specifications, just

CIRCLE 265 ON SERVICE CARD

266—'ONE MAN CREW' HANDLING SYSTEM

An eight-page circular completely describing the recently-introduced "One Man Crew" materials handling system is now available free from Lewis-Shepard Products, Inc. Included in the illustrated presentation are descriptions of the system, how it works and can be utilized, and its advantages. Another section outlines the type of equipment required for the "One Man Crew." If you're interested in the circular, just

CIRCLE 266 ON SERVICE CARD

How to use the

READER SERVICE CARD

- **Circle number of literature you want**
- **Print or type your name, position, company and address,**
- **Clip and mail the Service Card.**

267—HOSE FITTINGS

A new eight page bulletin describing and illustrating LE-HI Brass Hose Fittings for low and medium pressure service in conveying air, spray, steam, suction, water, welding, etc., has been published by the LE-HI Div. of Hose Accessories Co. According to the manufacturer, these fittings are widely used everywhere in general industry requiring industrial rubber hose. For your copy,

CIRCLE 267 ON SERVICE CARD

268—AGRI-TOX RESPIRATOR

New literature is available from Willson Products Div. on its Agri-Tox Respirator, which recently received USDA approval for use with Phosdrin insecticide in the field. The respirator is accepted for protection against demeton, parathion, aldrin, dieldrin, chlordane, EPN, nicotine, TEPP, HETP as well as Phosdrin. For your copies of the company's literature,

CIRCLE 268 ON SERVICE CARD

269—NEOPRENE SHEET

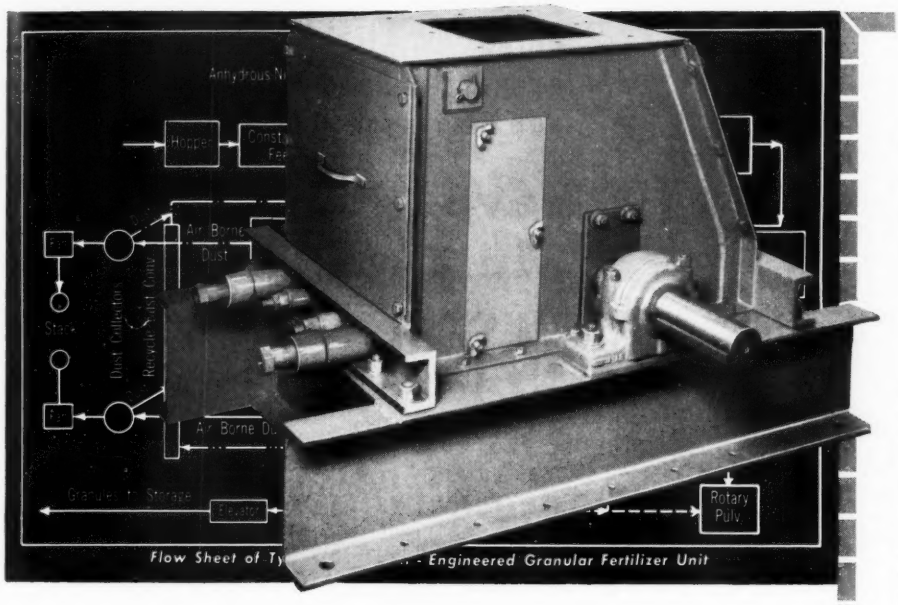
The Protective Coatings Div. of Metalweld, Inc. is making available to industry a new data sheet which lists the physical and chemical resistances of Neoprene sheet. The firm applies Neoprene linings to tanks, ducts and other equipment exposed to critical service. A copy will be sent to you if you

CIRCLE 269 ON SERVICE CARD

See pages 56 and 57 for information on these Reader Service Numbers:

270—Hanson Pumps
271—Nylon Filters
272—Formula Board
273—Clark Fork Truck
274—PVC Piping Systems

This Rotary Pulverizer Belongs In Your Fertilizer Unit, Too!



Flow Sheet of Ty... - Engineered Granular Fertilizer Unit

IT'S STURTEVANT-ENGINEERED TO GRIND UP TO 35 TONS OF TAILINGS PER HOUR

Mixing plant operators agree! They'll tell you that a Sturtevant Rotary Pulverizer beats anything else for keeping a granular or powdered fertilizer unit speeding along at full capacity. It's far better than Hammer Mills with hammers that stick . . . Cage Mills that skip small pellets . . . Knives that only slice and shear. No overload stoppages nor clogged grates. So, daily accumulation of over-sized lumps is no longer a problem. And, to top it off, original Sturtevant "Open-Door" accessibility makes cleaning quick and easy.

Sturtevant Engineering can also help you in other ways. For more than 75 years, leaders in the fertilizer industry have depended on us for assistance in designing their units and in keeping them up-to-date. Since we custom-build mixers, batching units, granulators, hopper and conveying systems to fit agreed-upon specifications, you can be sure of getting a complete unit or individual components that fit your requirements like a glove. Why be satisfied with anything less?

Investigate now! Filling out the convenient coupon at the right is the first step toward better fertilizer at lower cost. Why not mail it today?

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The "OPEN-DOOR" to *lower* operating costs over *more* years

CRUSHERS • GRINDERS • MICRON-GRINDERS • SEPARATORS
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I am interested in a new unit ☐ conversion ☐

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☐ SCREENING ☐ FEEDING
☐ MECHANICAL DEN & EXCAVATORS ☐ ELEVATING & CONVEYING

THE MAN WITH THE ★ MULTIWALL PLAN

UNION
PACKAGING SPECIALIST
DON DEININGER

saves Multiwall user $8 per M through specifications review

A Chemical Company, already using 43 different sizes and types of Multiwalls, planned to add new products to its line. Union Packaging Specialist Don Deininger recommended a simplification of Multiwall specifications and inventory. Union prepared a Specifications Manual for the manufacturer, also simplified, unified and modernized his bag designs.

Union Multiwall Recommendations are based on this 5-point Packaging Efficiency Plan

- DESIGN
- EQUIPMENT
- CONSTRUCTION
- SPECIFICATION CONTROL
- PLANT SURVEY

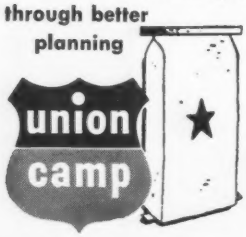
Results: user reported: (1) Union's recommendations for re-designing bag sizes and constructions in some instances saved as much as $8 per M.

(2) The new Specifications book enabled the customer to order bags more easily and accurately. It also simplified his inventory control.

(3) The new designs established a visual relationship between his family of products, enabled his sales force to do a better merchandising job.

This is a typical example of Union's 5-Point Multiwall Plan in action. Perhaps it can produce gains in your own Multiwall packaging operation. Write for additional information.

Better Multiwall performance through better planning



UNION'S PACKAGE ENGINEERING DEPARTMENT will study your Multiwall bagging methods and equipment and make appropriate recommendations, regardless of the brand of Multiwalls you are now using.

UNION MULTIWALL BAGS
UNION BAG - CAMP PAPER CORPORATION
233 BROADWAY, NEW YORK 7, N. Y.

NAC Annual Meeting

Theme: More Sales—Bigger Profits

PROGRAM

WEDNESDAY

A.M. 9:45	Meeting called to order
9:50	President's Address by Fred W. Hatch
10:20	NAC Staff Report with slides and charts on one of the busiest years the Association has had
10:50	"Sales, 86 Million—No Credit Dept." by W. H. Prigmore, assistant general manager, Eastern States Farmers' Exchange, Inc.
11:15	"Our Economy and Your Farm Market" by Vergil D. Reed, vice president and associate director of research, J. Walter Thompson Company
11:45	"Research Brings Additional Problems" by Roswell Garst, partner, Garst and Thomas Hybrid Corn Company
P.M. 6:30	Reception for Members and Guests

THURSDAY

A.M.	Open for Committee Meetings
P.M.	Golf Tournament
7:00	Annual Banquet (no speeches)

FRIDAY

A.M. 9:30	Introduction of New NAC President
9:40	"What Motivates Growers to Buy Pesticides" by Drs. J. M. Bohlen and G. M. Beal, Department of Economics and Sociology, Iowa State College
12:00	Adjourn

RELATIONS of marketing problems to progress in the agricultural chemicals industry will be stressed at the 24th annual meeting of the National Agricultural Chemicals Association in Spring Lake, N. J., September 4, 5 and 6.

"More Sales—Bigger Profits" is the theme of the meeting. The program includes reports on the role of credit versus cash payment for pesticides, the effect of research on expanding markets, how to get the farmer to pay cash for pesticides, the effect of rising costs on profits, and a full scale presentation on what motivates growers to buy pesticides.

Feature speaker will be Vergil D. Reed, vice president and associate director of research, J. Walter Thompson Company. One of the country's outstanding economic analysts, Reed will discuss economic trends and their effect upon the farm market and on pesticide sales. The title of his address will be "Our Economy and Your Farm Market."

The program Wednesday, September 4, will feature a President's address by Fred W. Hatch, manager, Agricultural Chemical Division, Shell Chemical Corporation, and NAC president; an illustrated report by members of the NAC staff; a report entitled "Sales, 86 million—No Credit Department," on how to get farmers to pay cash for pesticides, by W. H. Prigmore, assistant general manager of Eastern States Farmers' Exchange, Inc.; and a talk on "Research Brings Additional Problems," by Roswell Garst, a partner of the Garst & Thomas Hybrid Corn Company of Coon Rapids, Iowa.

Thursday, September 5, is being held open for NAC committee meetings.

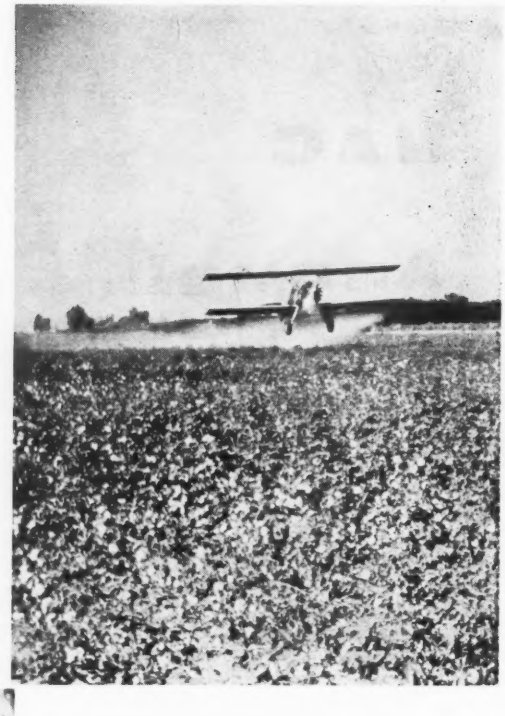
The Friday, September 6, program will feature a presentation on communication techniques to aid in market development and in boosting product sales. The presentation, entitled "What Motivates Growers to Buy Pesticides," will be made by Drs. J. M. Bohlen and G. M. Beal, Department of Economics and Sociology, Iowa State College.

Officers and three new members of the board of directors of the Association will be elected during the meeting.

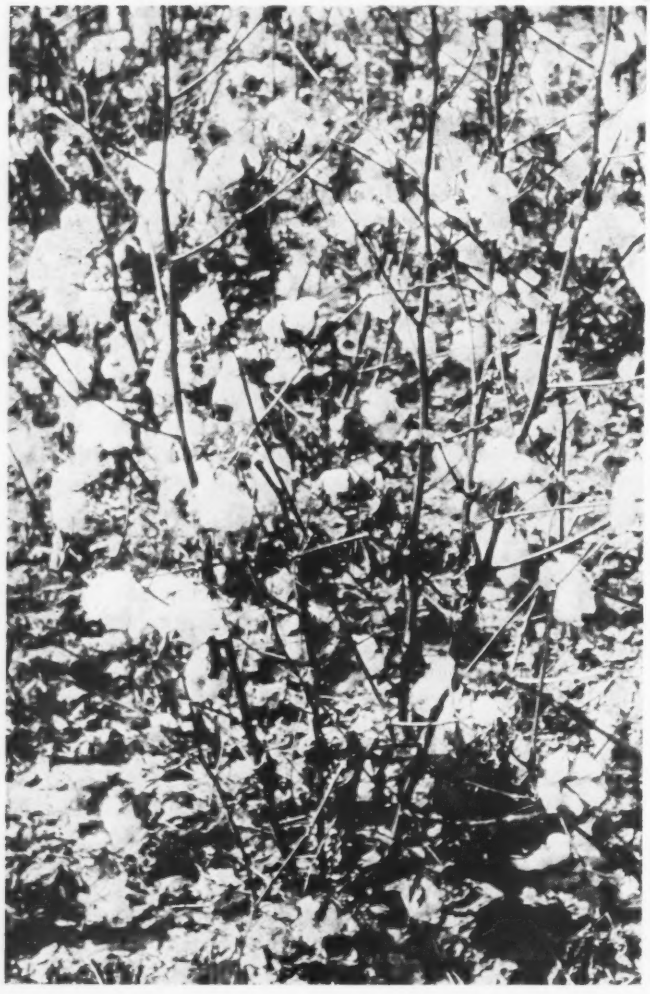
This meeting will be the last to be held at Spring Lake for several years. The NAC board of directors has recently decided to hold only one Association meeting each year, and location of the meeting will be at a different place each year. ▲

FOLEX

a new cotton defoliant



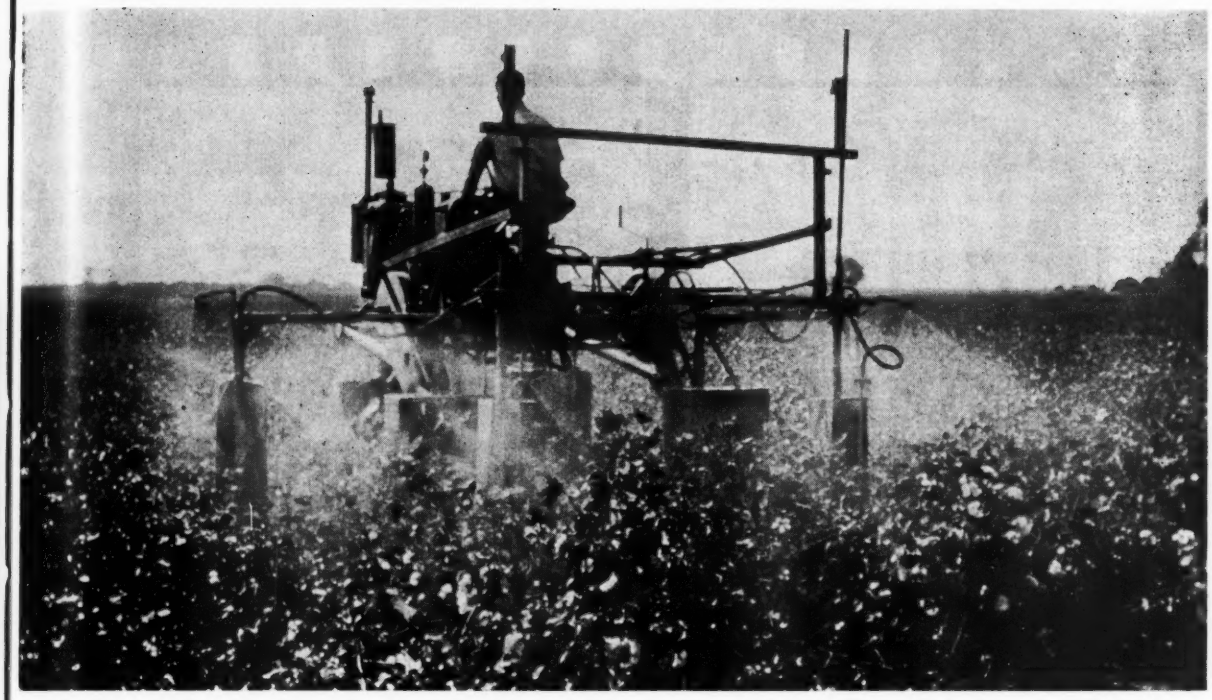
RIGHT: Aerial application of Folex at Hanford, Calif. BELOW: Close-up of cotton field 7 days after application of V-C's new defoliant. Cotton was rated 90–95 per cent defoliated after application of Folex at rate equivalent to 2 lbs. of merphos (tributyl phosphorotrithioite) per acre.



VIRGINIA-CAROLINA Chemical Corporation has developed a new defoliant that promises to bring outstanding benefits to cotton farmers. It acts quickly at low rates, and causes cotton leaves to fall while still green. V-C emphasizes that the new product—called Folex—will give "reliable, dependable defoliation regardless of weather or rankness of cotton." According to Frank Boyd, the company's Southern agronomist, Folex does not depend on dew for activation and removes immature as well as mature leaves from the plant.

The new defoliant is being test marketed in Mississippi, Arkansas, Arizona and California this season. V-C is compounding Folex specifically for cotton defoliation, and marketing it through the agricultural chemicals section of its chemical division.

It is an emulsifiable concentrate containing 6 lbs. per gallon of a new active ingredient—a chemical named merphos (tributyl phosphorotrithioite). Merphos and its defoliant activity were discovered by V-C research personnel in the Richmond laboratories. Here's how it happened.



V-C had been carefully observing the cotton defoliant field, and felt there was room for an effective new product. Various plant and weather conditions across the cotton belt sometimes cause even modern defoliants to give an unsatisfactory performance. Dependence on presence of dew, the necessity for applying large quantities of defoliant, danger of harsh chemical burn from overdosage, and requirements for corrosion-resistant, special mixing equipment have limited the use of defoliants. There was a need, V-C thought, for a cotton defoliant that would be reliable and give satisfactory defoliation under all plant and weather conditions. The company's research department embarked on a program to find or make the right compound.

The first major step toward this goal was taken when the organic section of V-C's research department, in their study of organic compounds which contain phosphorous, synthesized a chemical closely related to merphos. In screening this chemical, defoliation properties were discovered. Then the research group of the biological section set up a series of tests at the V-C experimental farm. Results of these tests were so favorable that the organic section stepped up its work on other chemical compounds in the group.

Two of the compounds were submitted for full-scale field testing at V-C's farm and at federal and state experiment stations in the cotton belt. In these tests, the chemical named merphos rated best. It gave outstanding defoliation and took less to do the job.

After observing these tests, conducted over a three-year period, state and federal experiment station personnel and V-C researchers were enthusiastic about merphos. It had characteristics not found in other defoliants.

V-C's management made the decision to go ahead with production and marketing of the new defoliant, and the name, Folex, was given to the product.

Folex is thought to remove cotton leaves by natural physiological action. It apparently makes the plant's leaves "age" in a few days. The leaves fall to the ground while green; no brown, curled leaves catch on bolls or branches. With less trash and stains, cotton is cleaner at the gin.

Another advantage of defoliation with Folex is the fact that it does not "freeze" leaves to the stalk.

V-C Agronomist Boyd points out that it is not necessary to apply large quantities of Folex. "The defoliant is concentrated," he says, "and a little goes a long way. In addition, no special equipment is required because the chemical is non-corrosive."

Here are other advantages of the new product:

▶ As a liquid concentrate it mixes readily with water.

▶ Since the application rates are low—as little as one pint per acre has given acceptable defoliation—all the defoliant for a large acreage may be stored in a small space.

▶ Folex may be applied by both ground and aerial spray equipment. Because mixing is fast and easy, sprayers gain extra operating time.

▶ The product has been tested in all areas of the cotton belt—humid and dry, dryland and irrigated. It has shown fast and consistent action under a variety of conditions. In the tests, rapid leaf drop started in 3 to 5 days; pickers operated within 7 days of application.

▶ Defoliation is not reduced by rain. Folex is readily absorbed into the leaf.

▶ When used as recommended, one Folex application does the job. ▲

GOOD to excellent results were experienced this year by cotton farmers from the Southeast to the Far West who used Thimet-treated cotton seed. Thimet is the first and only systemic insecticide to be used on seed on a broad commercial scale.

Thimet-treated seed produced seedlings with "built-in" protection against such insects as thrips, aphids, and spider mites up to ten weeks, according to cotton farmers. Reports from farmers were supported by reports made throughout the Cotton Belt by federal, state and industrial researchers.

USE ON ALFALFA AND SUGAR BEET SEEDS

Until mid-summer, Thimet, developed and manufactured by American Cyanamid Company, was registered by the U.S. Department of Agriculture for use on cotton seed only. Recently the USDA registered it for use on two other seeds—alfalfa and sugar beets. Extensive trials conducted by USDA field technicians and the manufacturer's research teams paved the way for clearing the systemic insecticide for use on seed of these crops.

Trials showed that Thimet will protect sugar beet plants from four to six weeks after emergence from the beet leafhopper which transmits the curly top disease. This disease can ravage a sugar beet crop. Alfalfa seed treated with Thimet will produce immunity to a number of insects, including the dread spotted alfalfa aphid from four to six weeks after emergence.

Performances of Thimet, phosphate-base insecticide, point to a new concept of insect control. Re earchers say that in the future this method of insect control will be as common as spraying and dusting methods of today.

HOW DOES IT WORK?

Here, with cotton as an example, is how it works and what it does:

Before the seed is planted, Thimet is applied to the seed as a wet dust which has been impregnated on activated carbon. The insecticide is 44 per cent of the formulation the remainder being materials that hold it to the seed. As the seed germinates and the plant grows, the insecticide is taken up from the treated seed into the growing seedling. It remains in the plant system from four to ten weeks. It moves throughout the whole plant, protecting even new growth from early season insects, which attack seedling cotton. These pests, mainly sucking types, stunt, deform and retard growth by sucking the plant juices which are necessary to sustain the plant's life.

As a seed treatment, Thimet is superior to foliar application of systemics in that its toxicants are distributed throughout the whole plant. When a systemic is used as a foliar application, the insecticide generally moves up and not down into the plant, protecting only top growth of the plant.

On the basis of limited commercial use and field trials conducted last year, K. P. Ewing, head of the cotton insects section of the USDA's research center at Beltsville, Md., gave this estimate of treating seeds with the insecticide:

"The seed treatment method of applying carbon dust and insecticide to the seed before planting continued to be the most effective and economical means of feeding systemics into the sap stream of the plant."

Thimet was tested throughout the Cotton Belt in 1954-1955. In 1956 it had limited commercial use because it was released to the potential market late in the season.

WIDE MARKETING THIS YEAR

This year is the first that it has been marketed widely in this country. It was also sold on a limited basis this year in Mexico, Nicaragua, Peru, and Brazil. Authenticated records show that in some instances up to 90 days control was obtained in these

countries against sucking and chewing insects that attack cotton plants.

Cost of treating cotton seed to plant an acre of cotton is about three dollars. However, this is more than offset in time, labor and equipment costs required for the two to four early season sprays on plants from untreated seed.

To get the right amount of the insecticide on cotton seed, it has been necessary to develop special machinery and a special seed treating process. For this reason, Thimet treated seed is available only from seed companies which installed special seed-treating machinery.

DOES THIMET AFFECT COTTON STAND?

Some farmers have raised the question whether Thimet affects the stand of cotton. It was thought that the chemical affected the emergence of the cotton.

"Under adverse growing conditions there may be some injury to the seed," says Frank M. Fitzgerald, plant industry technical service director of Cyanamid's Farm and Home Division. "This spring there were heavy rains during the cotton planting season and there were reports of some trouble with Thimet-treated cotton seed emerging. But at the same time there was trouble getting a good stand from untreated seed in the same areas.

"Most growers, however, attributed their trouble to weather. How much Thimet is at fault is something we are trying to find out at various research laboratories across the Cotton Belt. We must remember that cotton is a warm weather crop and if the soil is cold or if the weather is bad during the early planting season the cotton stand will be affected. The soil and the weather have to be warm before planting starts.

"But in all these reports there was no questioning the insecticidal properties of Thimet. It's been doing the job for which it was developed, and that is to kill insects."

Mr. Ewing's experiments with the systemic insecticide show that in some cases germination was reduced or retarded.

"In a few instances replanting of the treated plots was necessary. In most instances, however, there was no difference in the stand of cotton in the treated and the untreated plots after the usual chopping or thinning of the plants took place."

Mr. Fitzgerald also reported that growers had trouble getting enough of the treated seed planted per acre to assure a good stand.

"We found that in some instances growers were using the same plates in their seed planters as they had used with planting untreated seed," he said. "The result was that they were planting less seed per acre because the Thimet made the cotton seed a little thicker and therefore fed through the planter slower than the less bulky untreated seed.

"We've advised them that in the future the plates should be adjusted to compensate for the larger seed to get the proper amount of seed to the acre."

Research is now underway to extend the initial immunity of cotton plants by two other methods of applying the insecticide. These would be in granular or spray form. The granular Thimet could be placed in the furrow during planting for early protection, and side dressed along the plant row after emergence to control late season insects. The spray could be applied the same way.

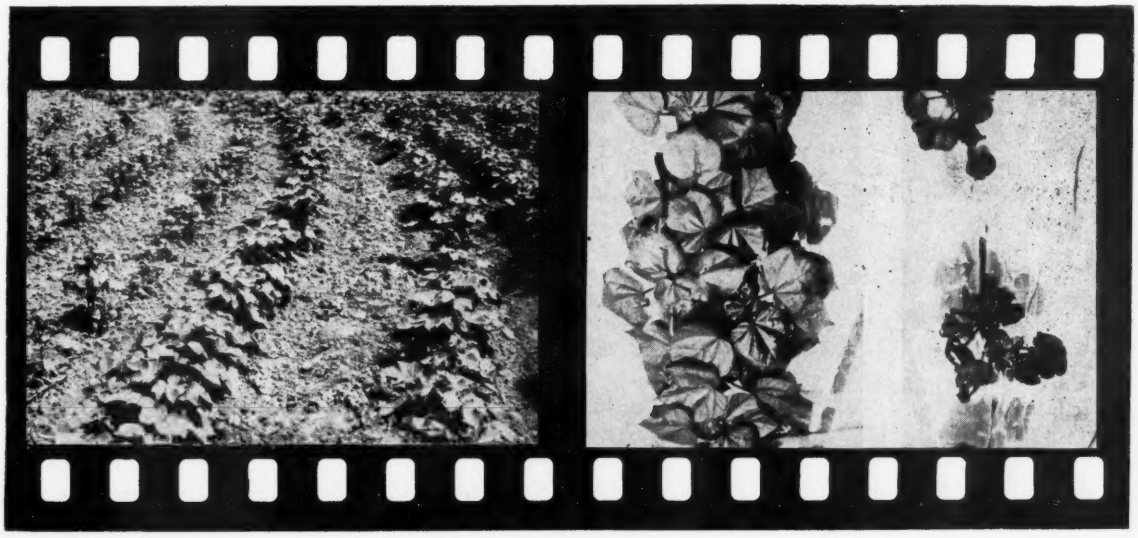
It is believed that these methods would be more effective against the boll weevil and boll worm which attack cotton in later growth stages.

SUMMING UP ADVANTAGES

The advantages claimed for the systemic insecti-

A demonstration of how Thimet spreads from the seed through the growing plant. In this field rows on right are more vigorous than plants from untreated seed at left which are more vulnerable to insects.

Thimet treated seed produced the plants shown below left with thriftier tops. Insect damaged plant (below right) came from untreated seed. Seeds were planted at the same time in the same field as part of a trial at Clemson.



cide on cotton can be summed up as follows:

It eliminates two to four early season sprays. Insect control is superior. Cotton farmers need not worry about missed sprays or dustings due to adverse weather or deciding whether there are enough insects present to warrant sprays. There is extra time for the farmer to take care of other work, such as harvesting grain. Plants are thriftier, both tops and roots. Controls insect vectors which spread plant diseases. Eliminates the danger of drift of highly toxic sprays or dusts which are a hazard to humans, livestock and crops on which residues of insecticides at harvest time must be considered.

Many of these advantages were noted by farmers in a random sampling made in July throughout the cotton growing regions. Here is the report, in brief:

FARMERS REPORT ON RESULTS

Southeast—Farmers in Cleveland County, N. C., claimed red spider control up to ten weeks. John Wortman, Route 4, Shelby, N. C., planted treated seed April 15 and was getting red spider control until June 24. Forrest S. Crowder, of Lattimore, N. C., planted at the same time and on June 10 reported treated cotton was a foot high and healthy, while untreated cotton was only six to eight inches high and showed ragged growth due to aphid and thrip damage.

John Simmons, Mountsville, S. C., reported aphid and thrip control on June 14, about eight weeks after planting; untreated cotton had some aphid and thrip damage.

R. H. Lovermore, of Pate Supply Company, Penbrook, N. C., said he planted his entire acreage allotment—250 acres—on March 31 with treated seed, and didn't need to use a conventional spray until June 24. In addition to aphid and thrip control, he thought he was getting some protection against boll weevil.

Texas—This is the second year that John Nigliazzo, Hearne, tried Thimet. Last year he planted 300 acres with treated seed, this year increased to 400 acres. He said his cotton was protected six to seven weeks before a conventional insecticide was used. Meanwhile, he said, neighboring cotton farmers during the same period had to spray or dust three to four times. He reported heavier tops and roots in treated plants.

PERFORMANCE 'PARTICULARLY GOOD'

Thimet was also tried this year for the second time by Clinton Harbors, a conservation award-winning farmer from LaGrange. He thought this year's performance of the systemic insecticide was particularly good because of the adverse weather that afflicted the state this spring. He planted treated and untreated cotton seed March 10. He was unable to apply insecticides to untreated fields before May 18 due to rains and wet fields. By that time there was some insect damage; the treated plants, however, stood up.

T. W. Rodgers, of Rodgers Seed Delinting Company, Waco, reports that some farmers did not get as good a stand with Thimet-treated cotton seed because they didn't plant as many treated seeds as untreated seeds. In one case the company's agronomist checked a report of fifty per cent reduction in stand due to Thimet. Investigation showed that the grower was planting 21 per cent less seed. And of the seed planted, 26 per cent was cracked compared with three per cent of the untreated seed.

On this basis, Rodgers reported, the farmer was getting about 40 per cent less Thimet treated seed per acre. As noted before, machinery adjustment is necessary to permit enough of the bulkier Thimet-treated seed to feed through the planter. Also the smaller openings in the plate tend to crack the larger treated seed.

Delta Area—Frank Fletcher, Tamo, Ark., reported a good stand from the 200 acres planted in treated seed, with thrip control seven weeks after planting. Bill Gibbs and Tommy Pugh, of Portland, Ark., and Milton Kline, manager of the Camelta plantation, near Anquilla, Miss., reported satisfactory results with Thimet. Next year Kline says he plans to plant 200 of the plantation's one thousand acres with treated seed.

PLAN TO INCREASE TREATMENT

Arizona—Last year there were some reports from growers who said they were unable to get a good stand from treated seed. Investigation showed that in most instances these growers were planting under unfavorable weather and soil conditions. This year results were termed excellent by Frank Pfeiffer, head of the Arizona Fertilizer Company, Phoenix, the largest cotton seed treater in the state.

This company plans to increase substantially Thimet treatment in 1958. Arizona Fertilizer has also carried out extensive tests on alfalfa and sugar beet seeds. Last month (August) the company planned to treat 19,500 pounds of sugar beet seed with Thimet.

WEATHER BLAMED FOR POOR EMERGENCE

California—Anderson Clayton & Company, the world's largest cotton growing firm, this year planted treated seed on 6,000 acres of one of its farms near Fresno. One half the acreage had to be replanted, but the farm manager felt that cold weather and not Thimet was responsible for poor emergence. He said that Thimet gave him good early season insect control; whereas he was forced to spray the untreated acreage that had to be replanted.

When spider mites in this area were present on cotton from untreated seed, spraying was necessary to control them. The spray was made up at the rate of one and a half pints of phosphate-base insecticide per acre. This cost $3.50 per spray per acre. Most of this acreage needed two sprays to get the same insect control obtained from Thimet seed treatment. Added to this were labor and equipment costs. Cost of treating seed with Thimet averaged $3 per acre. ▲

a big year for LEGISLATION AFFECTING PESTICIDES

J. A. Noone
Technical Adviser
National Agricultural Chemicals Association

STATE and Federal legislators have been busier than usual this year introducing bills which might affect the sale or use of pesticide chemicals. Such legislation is of particular interest to growers and dealers, formulators and manufacturers of the chemicals, for what happens in the State House can affect the price and availability of pesticides to users, and the conditions under which these products can be sold and used.

Most of the bills this year were not very different from legislation proposed last year or even five or six years ago. In 1951, for example, more than 200 proposed laws dealt with raising registration fees for pesticides, banning the sale of some useful pesticides, licensing the seller of pesticides, changing label requirements, limiting sales to those who have state permits to buy, and stipulating that states buy pesticides and re-sell them to growers at cut-prices.

Over 300 similar bills possibly affecting pesticides have been introduced in 1957. The sponsors of the bills and the states involved have been different in most cases from those in past years, but a major cause of such proposed legislation is still the unfounded concern about the use of pesticides brought on by irresponsible and exaggerated statements in the press.

The National Agricultural Chemicals Association's approach to legislation is to support measures which will improve the safe use of chemicals, and to supply pertinent facts to legislators when bills are proposed which will hurt growers or place unnecessary burdens on formulators and manufacturers. Since most legislators don't want to hurt agriculture or penalize industry, they are generally very receptive to facts on the subject and are willing to amend or discard bills which would do either.

A case in point was a bill introduced in Idaho in 1951 to put county officials in the business of buying pesticides and selling them at cost or at cut-prices to growers. The Association presented the many evils involved in this type of legislation—showing primarily that it would deny the farmers an adequate supply of pesticides in cases of emergency insect or disease outbreaks, and would also force many dealers and formulators in the state out of business. The bill was vetoed by the Governor and failed to pass over his veto.

Also that year a bill was introduced in Oklahoma to put the State penitentiary into the business of manufacturing pesticides. The Association again made its presentation, showing that the bill would not benefit the farmer or the public, and the measure was killed.

A bill similar to the above Idaho bill was introduced in Colorado this year. The Association worked with the local association in Colorado to draft amendments to the bill, and the measure was indefinitely postponed after the Association gave its views at a hearing.

Nearly every year a number of states consider general pesticide control bills. In 1951 such bills were passed by seven states—Maine, New Jersey, New Mexico, Rhode Island, Tennessee, Utah, and Wisconsin. When such bills come up the Association presents its position that state bills should conform with similar acts in other states. Otherwise, manufacturers and formulators who operate in more than one state would face the confusion of trying to comply with different conditions each time they crossed a state boundary.

As a guide to states, a model bill has been worked out by the Council of State Governments and supported by the Association and other industry groups. Three states considered bills of this kind in 1957. Two of the states—Maryland and Pennsylvania—adopted Association proposals which would bring their bills into line with the model bill and with other state acts on pesticides. Nebraska tabled their bill after its objectionable features were explained to the legislators.

The industry faced three administrative rulings which would have restricted sales of cotton dusts in Georgia, Louisiana and Mississippi to specific formulations designated by state authorities. Since such restrictions would prevent the sale of some useful materials and reduce the choice growers have to select materials they prefer, the Association argued that farmers would be benefited more if the states continued to register all effective and properly labeled materials.

Six years ago Pharmacy and Poison bills were a major legislative problem for the Association and the industry. Some of them would have restricted sales of pesticides to registered pharmacists. Others contained provisions which would have required special "poison" labeling on many pesticides. This was objectionable since it imposed labeling requirements not called for under the Federal Insecticide, Fungicide, and Rodenticide Act or the state insecticide acts.

The problem of attempting to restrict sales to pharmacists appears to be passing. We have no records of any such bills being introduced this year.

The matter of special labeling, however, is receiv-

(Continued on page 55)

THE FARM MARKET

an economic appraisal of the farmer's buying power today—and what we can expect from it in the next few years.

by John Harms

FROM all signs at mid-year 1957, selling in the farm market is likely to get tougher during the next two years rather than easier—although pesticide and fertilizer sales are likely to hold up.

The buying power of the American Farmer is likely to continue downward in the immediate years ahead—partly because of current crop surpluses, partly because of government policy, and partly because of inflation in the cost of major production items.

This is the conclusion drawn from our talks with economists both in and out of the government, and from various Federal reports. It is the sum of the judgment of top men in the field. It is based on projections of forces now at play both in the agricultural segment of the economy and the national economy as a whole.

Pesticidal chemicals and fertilizer industries, however, can count on continued high-level sales during the glum farm years ahead. Expert farm observers in Washington, while not unanimous about the effects on these industries, generally believe farmers view pesticides and chemicals as "investment protection devices." As one official put it, "Farmers can make tractors do another year, but they've got to buy more insecticides if confronted with insect infestations."

Infestations are likely to continue to be the prime motivating factor behind pesticide purchases, according to these observers. These will have more to do with future insecticide purchases than farm dollar income. But, they point out, as the price-cost squeeze intensifies, farmers will be more selective in their purchases, and perhaps wait longer than otherwise before buying. Thus, they add, we're heading into a harder selling period to move inventories, plus keener competition for the farmer's dwindling dollar.

For your advance guidance and understanding of the important economic trends in agriculture, here's the picture as we piece it together.

The bi-partisan House Appropriations Committee reports that four years ago net farm income was $14.3 billion, or about 5 per cent of the national income of $281.8 billion. Four years ago, the farmer received 47 cents of the consumer's food dollar. At that time, the farmer received an average of 82½ cents per hour for his labor.

During the past four years, the Department of Agriculture has proceeded to try to alleviate this "serious" situation by (1) reducing support prices, (2) cutting acreage, (3) increasing funds for research and extension, and (4) undertaking a rural development program. Last year, the Administration recommended, and the Congress passed, the Soil Bank to put up to $1.2 billion from the Treasury into the farmers' hands.

The Appropriations Committee sets down the government's record on agricultural policy like this: It has reduced price supports an average of 20 per cent since 1952. It has reduced acreage for cotton by 38 per cent, for rice by 22 per cent, for wheat and tobacco by 23 per cent. Funds for research by State experiment stations have been increased 133 per cent; funds for other research in the Department of Agriculture and the Extension Service have been increased 56 per cent.

The result of government action in the farm field, according to the Committee, is this:

In 1956, farm income was down to $11.8 billion, which includes direct relief payments from Soil Bank funds. This is a drop of $2.5 billion, or over 21 per cent, since 1952. Comparatively, the income of other segments of the American economy increased from $271.8 billion in 1952 to $306 billion in 1956, an increase of 12.5 per cent.

During this period the farmer's share of the consumer's dollar decreased from 47 cents to 40 cents, a drop of 17.5 per cent—while the share for the group between the farmer and the consumer increased correspondingly. Since 1952, the hourly return to the farmer for his labor has dropped from 82½ cents an hour to 70 cents an hour, while earnings of nearly every other economic group have increased substantially.

The Committee study goes on to say that during the same period, farm costs (except fertilizer and most farm chemicals) have increased about 10 per cent—reflecting increases in income to practically every group between the farmer and the consumer.

Crop surpluses since 1952 for cotton, wheat and corn have helped push the index of prices received by farmers from more than 380 in 1952 down to about 240 in June of 1956—according to the Economic Indicators prepared by the President's Council of Economic Advisers.

Supply and demand involving farm products now is not expected to approximate balance until roughly 1960—unless some emergency intervenes.

This outlook is bolstered by two of the top officials of the Department of Agriculture. Two years ago, Dr. Paarlberg, then Secretary Benson's personal economist, warned farmers not to live in the "dream world" of expecting wartime farm price levels—which were among the highest in recent years—to return. Subsequent events since Paarlberg, who recently was appointed an Assistant Secretary, stated this thesis proved him an accurate prophet. In May, another Assistant Secretary, Ervin Peterson, declared that current "low" farm prices appear to be "semi-permanent or permanent."

The size of this situation is readily seen from figures quoted from Economic Indicators. The general index of prices farmers receive for their products in May 1957 was a whopping 45 points *below* the price level of 1952. During the same period, according to Indicators, the cost of things the farmer buys for production went *up* 10 points. That, in a nutshell, is what's known as the farm price-cost squeeze.

Looking to the immediate years ahead, all indications point to more, not less, squeeze on the farmer. This process, incidentally, is one of the major forces pushing many farmers off the farm. It points unmistakably to fewer farmers and a concentration of buying power in the hands of the few.

Aside from the forecasts of no substantial increase in farm prices in the immediate years ahead, here are some of the forces now at play which promise to shave the farm dollar still more:

Rail freight rates have been increased once again this year—up to 7 per cent higher than the general 7 per cent increase established this spring. Transportation economists predict the new boost means an increase in farm cost of more than a quarter-billion dollars.

Interest rates on government-sponsored loans are inching higher. By next summer, they may be appreciably higher. The President has asked Congress to permit the government to charge interest on money it loans equivalent to what the U.S. pays for money it borrows. Many loans the government makes or insures have interest ceilings set by law. While this move, if granted, would have an impact on the economy in general, it can be expected to have a sharper impact on the farming segment because a major part of farm production is underwritten by loans—particularly in periods of low farm prices.

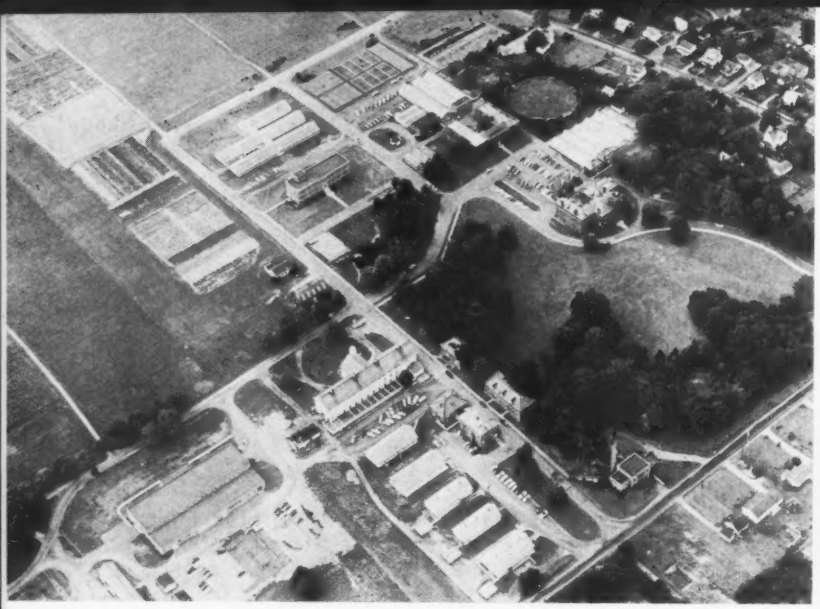
Other items of production importance in agriculture which are headed higher include everything made of steel—machinery, building material, fencing, and so forth. Trucks, tractors, wages, rents, living goods, and real estate taxes levied by local and state governments, all are headed higher.

It is perhaps significant to note that while most other producers of goods in this country can "pass on" increases in the costs of production—farmers, as a major producing force in this country, are alone in being prevented from passing on higher costs to the consumer. As one top economist put it, the farmer buys high and sells low. Generally speaking, he is forced to accept the first offer made for his products—because of the nature of the business.

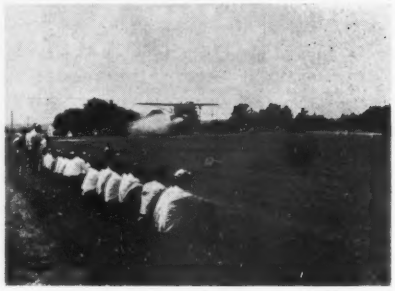
It is this relentless squeeze at which the efforts of those interested in preserving and developing the farm market are directed when planning federal farm policy. Generally, there are two schools of thought. One, of which Secretary Benson is the chief

(Continued on page 65)

OHIO P



Aerial shot of the Ohio Agricultural Experiment Station at Wooster. Photo courtesy of the station.



Demonstrating airplane application of pesticide dust. This Piper J-3 is especially rigged for spreading granular fertilizers and insecticides.

NINETY men interested in protecting three billion dollars invested in Ohio's agriculture met at Wooster August 13 and 14 to talk over latest advances against farm pests. Favored with good weather, the group of manufacturers, dealers, and technical people which make up the Ohio Pesticide Institute were shown effects of scores of chemical substances designed to kill scores of insects, fungi, weeds, and bacteria which plague Ohio's farmers.

Long planning and precise execution by officers of the OPI and staff members of the Ohio Agricultural Experiment Station paid off for those attending the two-day meeting. A mass of detailed information was presented by OAES staff members. It was quickly absorbed and digested by the group which represented 30 pesticide and equipment companies, several state and federal agencies, and many technical groups.

For members of the OPI the Wooster meeting was a preliminary exhibition of field trials yet to be completed. Final results of the year's tests will be presented at the annual meeting of OPI in November.

After a brief introduction and welcoming by administration and OPI officials on Tuesday morning, tours were begun on the experiment station's 1600 acres. Featured first was a walking tour of turf, shade tree, and ornamental experimental plots. Turf diseases, crabgrass control, borer control in shade trees, and other points of aesthetic and economically important plants were discussed by a number of experiment station technicians.

VEGETABLE CROPS AND THEIR FOES

Following a box lunch, attention was turned to vegetable crops and the enemies which assail them. Dr. J. P. Sleesman, vegetable entomologist, reported that neither pressure nor particle size of endrin spray treatment made any difference in controlling chewing insects on cabbage. Kill was accomplished by both large and small droplets. Dr. Sleesman also commented later that no effective means has been chemically devised for complete control of the potato flea beetle.

AIRPLANE DUSTING DEMONSTRATED

Highlighting Tuesday afternoon's tour was an airplane dusting demonstration. Developed by Ohio agricultural engineers, the specially equipped Piper J-3 featured precise metering of materials. From ten to several hundred pounds per acre of fertilizer or insecticide can be spread accurately by the plane. For purposes of the demonstration, attaclay was used. Accuracy of distribution was checked by yard-square trays placed in the spread area.

The first day's field activities were concluded by a wagon tour of scattered vegetable plots. Winding around the experiment station's landscaped and intensively cultivated test areas, the wagon train allowed OPI members to easily view experiments involving potato and vegetable insects and diseases.

Approximately 20 different locations were viewed on Tuesday's tour. Some locations offered as many as five different experiments.

Noted far and wide for its excellent food, Smithville Inn near Wooster was the scene of the OPI banquet. Institute President, M. G. Farleman of Sohio, presided at the meeting. Dr. W. E. Krauss, director of the experiment station, welcomed the pesticide group explaining that this meeting helped celebrate the 75th anniversary of the station. C. W. Ellenwood briefly traced the experiment station's foundation and growth over the past 75 years. Mr. Ellenwood, noted for his service to Ohio agriculture, is in charge of public relations for OAES.

Outstanding among Mr. Ellenwood's comments was the fact that for every dollar invested in research

PESTICIDE INSTITUTE

by Peter C. Crolius

LEFT: Andre Delaware and P. L. Pontoriero of Shell Chemical stand in front of 75th Anniversary Exhibition of insecticides. CENTER: Fred Weaver and Edward Redpath of Swift & Company inspect fruit disease exhibit.

Dr. W. E. Krauss, director of the Ohio Agricultural Experiment Station, presents welcoming speech to OPI people.

at the station, Ohio residents have reaped $200 in benefits. He cited in particular Ohio's tremendous greenhouse tomato industry. Launched with difficulty, that industry today leads all other states in size. Mr. Ellenwood added that there are 225 research projects currently underway at the experiment station.

Standard Oil of Ohio's film, "The Golden Harvest," concluded the evening's activities.

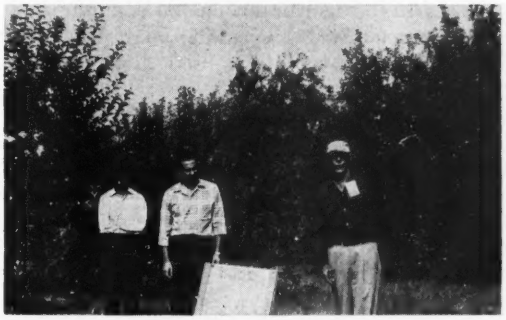
FRUIT DISEASES AND INSECTS

Wednesday's field tours were primarily concerned with diseases and insects of fruits. Drs. Cutright, Rings, and Hill and Mr. Frank Winter explained advances made in pest control of peaches, apples, and grapes.

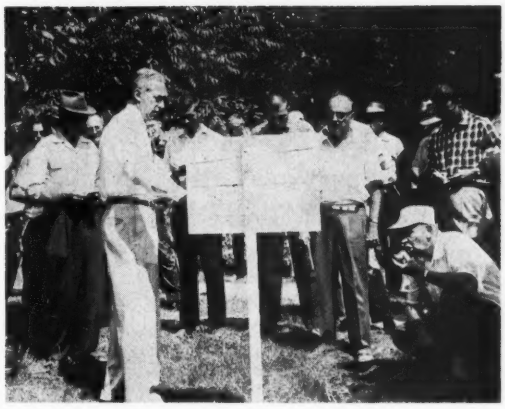
Dr. E. K. Alban, Ohio State College horticulturist, explained that weed control of many fruits and vegetables can be accomplished with many chemicals. "However, what the Ohio farmer wants and what we want to find is *economical* control," Dr. Alban stated.

Under a blazing sun, touring delegates to the OPI meeting were pleased to find "home grown" fresh fruit available at many of the stops in the tour. Such considerations by the planners and organizers of the pesticide meeting made a pleasant two-day outing as well as an educationally profitable experience. ▲

M. G. Farleman, president of OPI, presides at banquet at Smithville Inn. He's with Sohio.



Dr. Clifford R. Cutright (wearing cap) explains red mite control experiments in apples.



Dr. Roy Rings talks about weed control experiments in tomatoes.

WHAT is post harvest disease control? Is it the same as post harvest preservation? The interpretation that we have placed upon this problem places a differential between post harvest disease control and post harvest preservation.

Our reasoning behind this is that raw agricultural commodities such as fresh fruits and vegetables are actually living organisms. Consequently, deterioration of these produce is by disease. In preservation, we visualize materials that are already dead which you attempt to preserve in their original state. The principal difference, as you can see, therefore, lies in the fact that in post harvest disease control, we are dealing with a living, functioning organism as compared to a dead, non-functioning organism. Therefore, post harvest disease control not only involves control of the externally induced biological deterioration but also involves the control of the physiological changes that occur in living produce.

Post harvest disease control is more than the application of a chemical to the fresh produce; it involves multiple factors. These factors extend as far back in the production of the fresh produce as proper selection of seed and varieties; the proper control of the field diseases and insects; harvesting the produce at the proper degree of ripeness; and field selection as to quality and the minimizing of mechanical injuries. It extends into the packing operations where sanitation is an important factor, the proper removal of field heat; the minimizing of mechanical injuries, and the proper grading and selection of produce for quality. It extends to the transportation of these raw agricultural commodities from the packing operation to the distribution point where mechanical injury should be minimized; proper temperature control and a minimum of time of transit. In the distribution channels, minimizing the time between distribution and ultimate consumption. Proper display conditions and the avoiding of mechanical injuries.

The application of chemicals plays an important role in post harvest disease control; however, chemicals should only be used to supplement good practices in the field, packing shed, transportation, and the distribution operations.

THE IMPORTANCE OF POST HARVEST DISEASE CONTROL

We may ask ourselves, "What is the significance of the post harvest losses that occur in fresh produce?" Do these losses represent any appreciable loss of materials which would be reflected in the selling price of the produce at the consumer level? Is it a significant factor in the availability of certain types of fresh produce for the consuming market? Would it enable new types of produce to be introduced to the consuming public if the post harvest spoilage could be reduced?

We are of the philosophy that with the increased world population, better and more efficient means of distribution of food products will ultimately be a necessity in order to feed the population. With the expansion of the urban areas into the agricultural lands, with the expansion of industry to new areas of the country, the available lands for agriculture are decreasing. It is indeed true that we are developing more efficient means of growing of agricultural produce; however, there is a limit as to how much can be grown per unit of land. Much work has been done on the field diseases and the control of these diseases during the growth and production of the fresh produce. It is only logical then that this same approach be applied to the harvested products in order that the yields of the fields may be utilized as efficiently as possible for man's food.

There is a sizeable monetary loss to the growers and shippers of fresh produce which also would represent a sizeable reduction of the quantity of fresh produce available to the consuming public. Consequently, post harvest disease or spoilage is a significant factor in the consumer price and the availability of fresh produce.

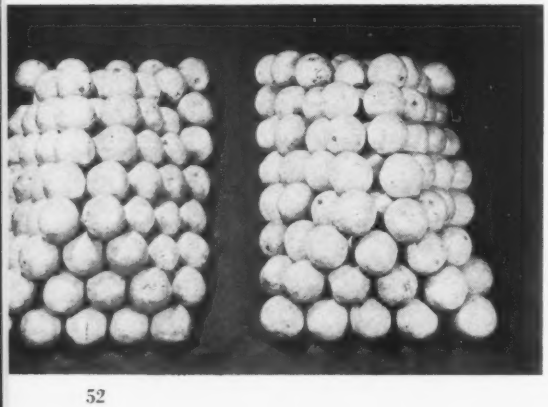
AREAS OF CHEMICAL APPLICATION

In view of the broad scope of the factors involved in post harvest disease control, there is a sizeable potential for the chemical manufacturer as well as the chemical specialty formulator.

The area of field disease control and insect control offers a very large potential for agricultural chemi-

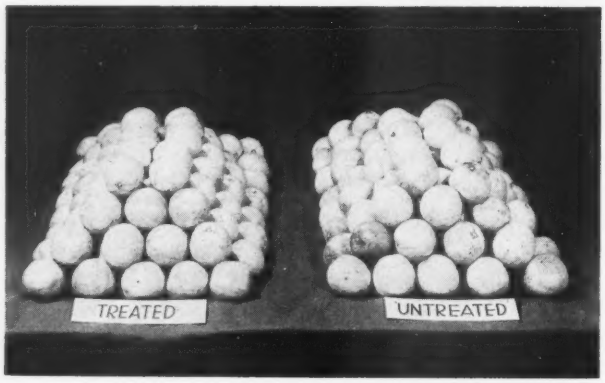
AFTER 5 DAYS

Oranges treated with Dowicide A (sodium orthophenylphenate) are compared with untreated fruit. Treated at left; untreated, right.



. . . TWO WEEKS

Treated Untreated



post harvest disease control of fruits and vegetables

James S. Brosier
The Dow Chemical Company

cals. This potential for insecticides, fungicides, and herbicides is now being realized by the various agricultural chemical companies.

The field of sanitation offers an excellent potential, at the packing shed level. The waters used for processing and washing the vegetables need biological control agents. Sanitation of the processing rooms and storage rooms is vitally needed in many of these operations. At the present time, very few sanitation aids are being used in the packing operation. Established products as well as new products could be used very extensively in this field. The sanitation and disinfection of the equipment used for grading and packing is also a necessity. The cleaning and sanitizing of the harvesting containers that are used for bringing in the produce to the packing shed is being considered now to cut down on contamination.

DIRECT APPLICATION OF CHEMICALS TO FRESH PRODUCE

The area of direct chemical treatment of fresh fruits and vegetables offers several possibilities for the use of chemicals. Probably the most widely used and recognized application of chemicals at the present time is the use of materials to reduce the respiration and transpiration of fresh produce. This is usually accomplished by a formulated wax coating of some type. This application should offer excellent potentials for other chemicals that have film forming characteristics such as latexes, resins, and synthetic gums.

At the present time, most coatings when applied to fresh produce emphasize the improvement of the appearance of the produce and do a minimum of control of respiration and transpiration. There is a need for better and more effective agents for respiration and transpiration control which maintain or improve the appearance of the fresh produce.

Sprouting of root and tuber crops such as Irish potatoes, sweet potatoes, turnips, carrots, etc., in storage presents a real problem. Chemicals that would inhibit sprouting would be of great value.

Chemicals that would retard the enzymatic process of ripening so that produce could be held in storage or in transit for longer periods of time would be of great value as would chemicals for control of bacterial and fungal diseases of fresh produce. This application offers an excellent potential to the chemical and formulating industry.

. . . 30 DAYS

Treated Untreated

BIOCIDES IN POST HARVEST DISEASE CONTROL

Many products have been used in the past for this application; however, some cannot be used today because of the enactment of Public Law 518 by the 83rd Congress, which is better known as the "Miller Amendment" to the Federal Food and Drug Cosmetic Act. Compounds to be used in this application today must have a tolerance established. Some of the chemicals that have been used in the past are borax, salicylanilide, various carbamates, diphenyl, o-phenylphenol, chlor-o-phenylphenol, chlorine, ammonia, sulfur dioxide, and quaternary ammonia compounds.

At the present time a considerable number of tolerances have been established on chemicals for agricultural applications; however, very few chemi-

Some Post Harvest Spoilage

Commodity	Amount Shipped or Sold Fresh 1000's	Average Decay Loss— $1,000
Oranges, tangerines and lemons	70,000 boxes	$2,560
Apples	72,000 bushels	3,870
Peaches	36,000 bushels	1,200
Strawberries	5,000 crates	760
Pre-packaged vegetables	?	?
Lettuce	29,000 crates	8,980
Potatoes	321,000 bushels	3,980
Celery	20,000 crates	2,960
Tomatoes	29,000 bushels	2,210
Cantaloupes	11,000 crates	1,980

Sources: Spoilage of Fresh Fruits and Vegetables in Rail Shipments Unloaded at New York City, 1935–42. J. S. Wiant and C. O. Bratley, U.S.D.A., Circular No. 773.

cals have had a tolerance established for post harvest disease control. To our knowledge the two principal materials that have tolerances established for post harvest disease control are diphenyl and sodium orthophenylphenate. There are some indications, however, that the chemical, sodium dimethyldithiocarbamate may also receive a tolerance for application to melons for post harvest disease control.

For those materials that have had a tolerance established for a specific application, when such fresh produce is shipped that has been treated with one of these chemicals it must be labeled to indicate that a preservative chemical has been added. This requirement is set forth in Section 403-K of the Food, Drug, and Cosmetic Act of 1938.

This particular requirement for the labeling of treated raw agricultural commodities has caused considerable controversy in the fresh produce industry.

Some organizations are of the opinion that consumers would object and not purchase fresh produce that has been treated with a post harvest chemical. It is believed by some that in view of the fact that a tolerance has been established and the establishment of this tolerance involves the evaluation of the health hazard involved in the use of the chemical, the establishment of a tolerance is sufficient legislation to cover the situation.

This is a situation that involves the education of the consuming public to the fact that if they do purchase produce that has been treated with a substance to retard bacterial and fungal spoilage, they are receiving a premium product which not only should have better keeping qualities in their own homes but will maintain its freshness and utility for a much longer period of time.

APPLICATION OF BIOCIDES TO FRESH PRODUCTS

Chemicals that are used for bacterial and fungal control in post harvest disease generally have to be formulated in some manner before they can be successfully applied. There is considerable variation in the various processes of packaging and handling different fresh produce. For instance, in the processing of cantaloupe, there are three general methods of preparing the cantaloupe for packing: 1) simply utilizing a dry brush to brush off the surface dirt of the melon. There is no water involved in this operation; 2) wet brushing the melons. There the brushes used for brushing the melons carry water which mechanically brushes off the dirt as well as having water present to do a degree of washing; and 3) actually passing the fruit through a water trough to wash and remove the surface dirt.

As you can visualize in a situation like this for one commodity, it is possible that three different types of formulations would be required to apply a post harvest disease control agent. In addition to the three methods of processing the cantaloupe, they are waxed in many instances and the possibility of incorporating a chemical agent into the wax exists.

To properly develop a chemical for this application, considerable effort should be placed on proper formulation. In some instances, such as in orthophenylphenol, there may be phytotoxic effects on the fresh product. Proper formulation, in many instances, overcomes this difficulty. For example, in the work that has been done at the Florida Citrus Experiment Station at Lake Alfred, Florida, it was found that the incorporation of hexamine (hexamethylenetetramine) would prevent the burning of the rind by the orthophenylphenol. Consequently, this Research Organization has developed a treatment for citrus based on a 2 per cent solution of sodium o-phenylphenate plus 1 per cent addition of hexamine. It also has been found that if high *p*H is maintained in sodium o-phenylphenate solutions, *p*H's in the range of 11 to 11.5, that the phytotoxicity effects can be reduced.

It is necessary to formulate sodium o-phenyl-

Important Post Harvest Spoilage Problems (caused by parasitic diseases) of Fruits and Vegetables

Disease	Organisms	Commodities Affected
Blue mold rot	Pennicillum app.	Apples, pears, citrus, cherries, plums, grapes, other small fruits
Grey mold rot	Botrytis cinerea	Grapes, berries, pears, apples, lemons, oranges, practically all vegetables
Rhizopus rot[2]	Rhizopus nigricans	Strawberries, peaches, plums, cherries, honey dew melons, sweet potatoes and many other fruits and vegetables
Brown rot	Sclerotinia fructicola	Stone fruits
Fusarium rots	Fusarium app.	Root crops, tomatoes, melons, cucumbers, peppers
Late blight	Phytophthera infestans	Potatoes, tomatoes
Watery soft rot	Scleratinia solerotiorum	Most vegetables, particularly leafy ones and certain root crops
Bacterial soft rot[3]	Erwinia caretovera. Some Pseudomonas and Escillus app.	Potatoes, carrots, celery, cabbage, lettuce, tomatoes, and other leafy vegetables and root crops

[1]Sources: Market Diseases Caused by Fungi and The Diseases Bacteria Cause. U.S.D.A. Yearbook of Agriculture, 1933, Plant Diseases. Diseases of Fruits and Vegetables Found on The Market, and Means of Controlling Them. C. O. Bratley and James S. Wiant. Journal of Economic Botany 1950, Vol. 4, 177–191.

[2]Rhizopus rot is one of the most important of all transit diseases in poorly refrigerated shipments.

[3]Bacterial soft rot is the most important of all decays affecting vegetables after harvest.

phenate with buffering agents so that a relatively high *p*H can be maintained in the treating tank. In addition, organizations have worked with the incorporation of o-phenylphenol into the waxes that are used for waxing the citrus fruits and have obtained a measurable degree of success in controlling the bacterial and fungal diseases of the citrus.

The method of application and the proper formulation are critical factors in developing the application of a chemical agent in this type of application.

Post harvest disease control is a developing field for chemicals and formulated products. There are needs for sanitation agents in the packing and processing operations. There are needs for effective means of cleaning and sanitizing field boxes used in harvesting and transporting the harvested fresh produce. There are needs for effective agents for the control of bacterial and fungal disease of the harvested fruits and vegetables. The potential for products in post harvest disease control can and will be realized; however, it will take considerable research and development efforts to find suitable answers for many of these problems. ▲

Legislation *(Continued from page 47)*

ing increased attention. Many states and the Federal Government are considering so-called "hazardous substances" bills. These are designed to protect the users of chemicals by requiring special labeling. Some are intended to cover only household chemicals while others would also cover pesticides and other agricultural chemicals. Five states considered such bills this year.

Inasmuch as the labeling of pesticides and other agricultural chemicals is now adequately regulated, the Association seeks to secure an exemption for these materials from these bills. We have been generally successful in securing it.

Federal legislation must also be closely watched, although the industry has been affected very little since passage of the Miller Amendment to the Food, Drug and Cosmetic Act in 1954. Three "hazardous substance" bills were introduced at the Federal level this year. After the problems of dual jurisdiction were presented, agricultural chemicals were exempted from these bills on the basis that they were already adequately regulated and labeled.

However, such bills as those proposed to control food additives must be watched to insure that pesticides are not inadvertently brought under additional and possibly conflicting legislation. Since pesticide chemicals are already adequately covered by the Miller Amendment, an attempt has been made to exempt them from all the food additive bills offered this year.

The constant aim of Association review of proposed legislation is to maintain uniformity of laws governing pesticides throughout the states, to support laws which will protect users and the public alike, and to avoid a patchwork of laws which would hamper the industry's service to growers and to other users of pesticides. ▲

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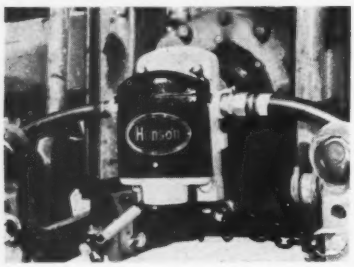
FARM CHEMICALS

Equipment & Supplies

HANSON HAS NEW LINE OF SPRAYER PUMPS



A new line of two-piston and four-piston displacement sprayer pumps have been introduced by Hanson Equipment Co. The company says that more gallonage at higher pressures is delivered by these pumps than by any other pumps of the same or even larger physical size. Pump lubricants cannot mix with chemicals being pumped, so damage from diluted lubricant is impossible.

The two-piston pump weighs 22 pounds and delivers 4.7 gallons a minute. The four-piston pump, which weighs 28 pounds, delivers 9.4 gallons per minute.

Hanson reports that all types of agricultural materials can be handled with safety. For details,

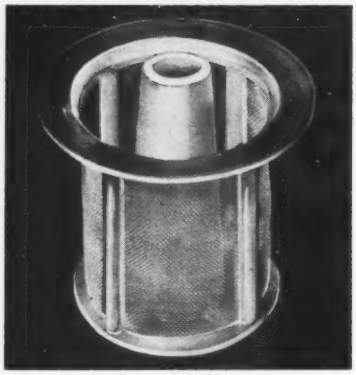
CIRCLE 270 ON SERVICE CARD

PESTICIDES MULTI-PACKED IN WRAPAROUND CARRIER

United Co-operatives, Inc., Alliance, Ohio, is using a wraparound carrier to multi-package three cans of pesticides which are used together but cannot be mixed beforehand. The carrier is produced by the Gair Boxboard and Folding Carton Div. of Continental Can Co.

The three products had previously been sold individually. The multi-pack now allows the customer to buy them as one easy-to-handle unit.

ALL-NYLON FILTERS FROM DANIELSON MFG.



Patent Pending

New, complete all-nylon filters designed to withstand rust and corrosion in a wide range of applications have been announced by The Danielson Manufacturing Co.

The filters are custom-molded in types, sizes and shapes to meet specific filtering requirements. Effectiveness of nylon screen filters has been proven with insecticides, the manufacturer reports.

For more details,

CIRCLE 271 ON SERVICE CARD

FORMULA BOARD FOR AUTOMATIC PROGRAM CONTROL IN BATCHING

A new formula board resembling a simple cribbage board has been introduced by Richardson Scale Co. as a means of achieving complete automation in the program control of batching operation.

When the formula board is used for pre-setting weight data in an automatic proportioning panel, it eliminates the need for manual weight settings and the possibility of human error in electronically controlled operations involving the proportioning of bulk materials, says Richardson. The combination board and panel are used as components in Richardson's Select-O-Weight system.

The formula board is said to be especially useful for processors using many mixing formulas with frequent changeover. For more information,

CIRCLE 272 ON SERVICE CARD

CLARK INTRODUCES NEW FORK TRUCK

A battery-powered fork truck of 1500 lbs. capacity, weighing slightly over 4,000 pounds with battery, now is available from the Industrial Truck Div., Clark Equipment Co.

Named the Electric Clipper 1524, the machine will travel 6.3 mph loaded, has a lift speed of 43 fpm loaded and will climb a 10 per cent grade. Minimum aisle for right-angle stacking is 71½ inches plus load length. A finger-tip lever on the steering column controls forward and reverse direction and automatically puts the machine into first point of power. The lever returns to neutral when the driver leaves his seat.

Three independent braking systems are standard: regular hydraulic service brakes, reverse-torque braking accomplished by reversing the direction of travel and a "dead-man" parking brake which sets automatically when the driver leaves his seat.

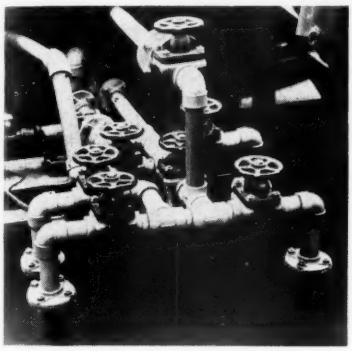
Further information may be obtained by

CIRCLING 273 ON SERVICE CARD

PVC PIPING SYSTEMS FOR LIQUID FERT. FACILITIES

The availability of polyvinyl chloride pipe, fittings, flanges and valves provides a relatively low cost solution to the corrosion problems involved in designing piping systems for liquid mixing tanks and field treating equipment, reports Tube Turns Plastics, Inc.

Polyvinyl chloride resists the attack of corrodents and is considerably less expensive than stainless steel and other suitable metals and alloys, according to Tube Turns.



The Washington Cooperative Farmers' Association utilizes PVC piping for the 1″ through 3″ charge and discharge lines of mixing tanks at all seven of its bulk stations.

For more information,

CIRCLE 274 ON SERVICE CARD

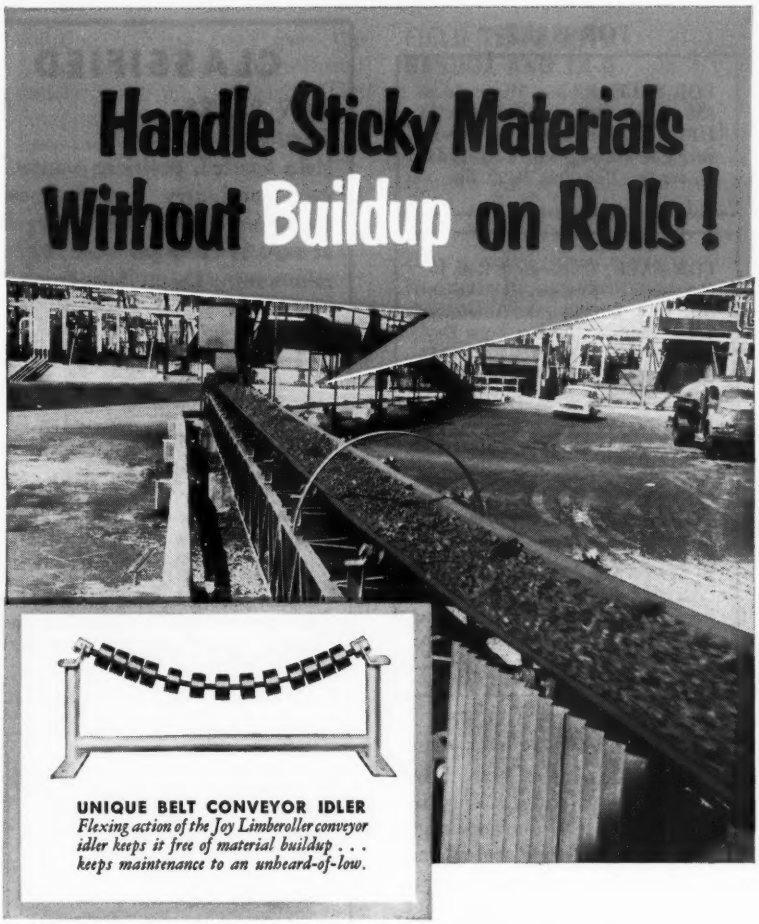
Suppliers' Briefs

Arkell and Smiths. R. P. Kessler's appointment as director of research and development has just been announced. He had been packaging engineer and director of packaging research for the past 11 years.

Beckman Instruments, Inc. Ray St. Onge is named product manager for all instruments of the Process Instruments Div., and George A. Green becomes western district manager of the division.

Blaw-Knox Co. has promoted Benjamin D. Russum to manager of its expanded Midwest headquarters at Chicago, Ill. Dr. Hal B. Coats has been named assistant manager.

Handle Sticky Materials Without Buildup on Rolls!



UNIQUE BELT CONVEYOR IDLER
Flexing action of the Joy Limberoller conveyor idler keeps it free of material buildup . . . keeps maintenance to an unheard-of-low.

Belt conveyor maintenance can be a real headache when sticky chemicals and fertilizers start gumming up the idlers. The unique Limberoller belt conveyor idler is completely flexible—made of resilient molded neoprene discs on a flexible steel cable. This flexing action breaks loose any material building up on the rolls—makes maintenance dive 30% to 90%.

The Limberoller has already given over *12 times the service life* of conventional idlers in many applications—proved extremely effective in handling triple superphosphate, ammonium sulphate, and sticky fertilizers.

The Joy Limberoller also resists dust, abrasion, and corrosion . . . no bearing trouble because only two bearings are used and these are up out of the dirt zone. Get details from ***Joy Manufacturing Company, Oliver Building, Pittsburgh 22, Pa.*** In Canada: *Joy Manufacturing Co. (Canada) Limited, Galt, Ontario.*

Write for FREE Bulletin 131-77

Consult a Joy Engineer

For Air and Gas Compressors, Vacuum Pumps and Boosters, Conveyors, Fans, Electrical Connectors, Oil-Free Compressors.

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FOR SALE

FOR SALE: Ribbon Mixers 56 to 336 cu. ft.; Hammer Mills 20 to 75 HP; also glass lined tanks, dryers, etc. Perry Equipment Corp., 1430 N. 6th St., Philadelphia 22, Pa.

FOR SALE: Louisville 8-Roll 36" Dewatering Presses; Davenport No. 2A; 24,000 gal. Aluminum Tank; Louisville Steam Tube Dryers 4' x 30', 6' x 30' & 6' x 45'. Perry Equipment Corp., 1430 N. 6th St., Philadelphia 22, Pa.

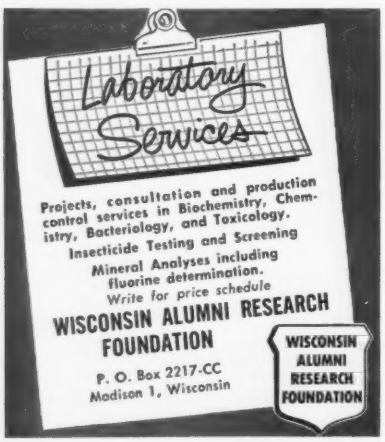
FOR SALE: Tanks: Ideal for storage of acid. Three 10,000 Gal. tanks 7/8" thick, Plenty of openings. Four steel sadles. Located in Central Ohio. One 10,000 Gal. tank 3/8" thick. All welded seams. Located in Pennsylvania. Call or write R. R. Jones, Coshocton, Ohio, Box 182. Phone 2113W.

Suppliers Briefs *(Continued)*

The Bristol Co.'s Newark, N. J. sales and service office has been moved into new enlarged quarters at 744 Broad St. Branch manager is R. C. Bechert.

Chase Bag Co. Appointment of J. A. White, Jr., as manager of the Dallas, Tex., branch was recently announced. He is succeeded as manager of the Richmond, Va., sales office by Floyd W. Clark.

Dorr-Oliver Inc. has appointed Rittelmeyer and Co., Inc., Atlanta, Ga., and R. V. Gildersleeve Co., Baton Rouge, La., as pump distributor and pump representative, respectively.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CLASSIFIED ADVERTISING

NEW RATES . . .
Effective July 1 1957

Help wanted, positions wanted, used machinery and business opportunities are now charged at only 15 cents per word, $2.50 minimum. Count box number as five words.

Display ads . . . $18.00 per column inch, minimum of one inch. Ads over the minimum are accepted only in multiples of one half inch.

For prompt results, send your classified ads to Farm Chemicals, 317 N. Broad St., Philadelphia 7, Pa.

Closing date: 10th of preceding month

HELP WANTED

MARKET ANALYST—AGRICULTURAL

Major chemical producer with headquarters in Chicago seeks man, age 25–35, degree in technical sciences or economics, preferably in agriculture or agronomy, with several years' experience in agricultural chemicals or allied products. Plan, prepare and interpret agricultural market studies of market potentials, sales patterns, sales analyses, prepare long and short term forecasts. Develop competitor and industry data, study acquisition and merger possibilities. Please send resume to "630" care FARM CHEMICALS, 317 N. Broad St., Philadelphia 7.

WANTED: Man 25 to 35 years old with fertilizer manufacturing experience. Able to formulate and handle manufacturing and shipping in small New England factory. Give experience, references and salary expected. Address "640" care FARM CHEMICALS, 317 N. Broad St., Philadelphia 7.

CHEMICAL ENGINEERS

Progressive and expandingWestern fertilizer firm presents excellent opportunities for a PRODUCTION SUPERVISOR and a DESIGN ENGINEER. Chemical Engineering degree required with experience in "wet process" phosphoric acid operations and fertilizer manufacturing.

Both positions offer a fine potential for future advancement.

Please send complete resume. Address "635" care FARM CHEMICALS, 317 N. Broad St., Philadelphia 7.

George H. Fry Co. has named Albert LaSalvia as sales representative to cover a territory which includes the Eastern and Midwestern sections of the country.

Fulton Bag & Cotton Mills has sold its Kansas City, Kans., textile bag factory to the Pioneer Bag Co. of Kansas City. Jason M. Elsas, vice president, said the company will continue to serve its Midwest textile bag customers without interruption from plants located in adjacent areas.

The Frank G. Hough Co. Elevations within the financial section: Robert L. Smith has been elected secretary and treasurer; Frank M. Docauer, former staff assistant, has been elected assistant secretary; and Fenton O. Richards has been elected controller of the company.

Howard B. Casper recently was named purchasing agent for Hough; Jules C. Laegeler became chief engineer and T. G. Granryd, manager of the Product Improvement Dept.

Hudson Pulp & Paper Corp. Joseph Leroy Blancett has been named district manager in the Multiwall Dept. for the Arkansas, Mississippi, Western Oklahoma region with headquarters in Little Rock, Ark.

Robert I. Sutter was promoted to division manager in the Multiwall Dept. for a region including Ohio, Michigan, West Virginia and Pennsylvania.

Schutte and Koerting Co. reports it will soon invest in the neighborhood of a half million dollars in expanding its Cornwells Heights, Pa. manufacturing facilities.

CHEMICALS

PHOSDRIN TREATED FIELDS REPORTED SAFE FOR COWS

Five University of Wisconsin agricultural researchers told a meeting of the American Dairy Science Assn. that phosdrin will not harm cattle eating the treated forage nor leave residues in the milk or beef.

The Wisconsin researchers, J. B. Knaak, J. E. Casida, P. E. Gatterdam, R. D. Lance and R. P. Niedermeier, conducted tests with 14 milking cows for three months, giving the cows various amounts of phosdrin in the feed daily. They periodically inspected the milk, blood and fat tissues of these cows and analyzed the meat cuts at the end of the trial to determine if any of the insecticide appeared as residues in the animal products destined for human consumption.

No insecticide showed up in the milk, even for cows on the highest dose of phosdrin. These results were confirmed by radioactive tracer techniques where phosdrin insecticide was found to be rapidly degraded and excreted in a few hours after feeding.

The maximum amount of phosdrin in properly treated forage would be well under this safe level, the researchers pointed out.

Studies with 15 calves bore out the results of experiments with cows—that the maximum amount of phosdrin that would normally occur on properly treated forage would not harm the animals nor make the products dangerous for human consumption.

The insecticide cannot yet be used on forage bed to dairy cattle because there are some other clearances necessary before FDA officials can give it their okay.

GIBBERELLIN IN TABLETS FROM NITRAGIN COMPANY

Gibberellic acid now is on the consumer market in tablet form. Nitragin Co. calls its product Nitra-Tone, and is aiming it at the enthusiastic amateur grower as well as nurserymen and florists.

One tablet dissolved in two ounces of water makes a 10 ppm solution. Nitra-Tone uses the tablet form so the water solution can be made up as needed. The company reports that the tablets keep indefinitely, but the solution loses strength in a week or so.

According to John A. Matchette, president of Nitragin Co., the research department is experimenting with the effects of a gibberellin formulation on specific food and feed crops. The company will be ready to market agricultural formulations to farmers as soon as Food and Drug Administration clearance is received.

VERMICULITE FOR ROOTING LEMON TREES

Propagating lemon tree branches in vermiculite is credited with producing lemon trees to bearing age much sooner than the normal budding method, according to Zonolite Co.

Results were noted at Dickman

Farms, Ruskin, Florida, which expects to produce up to 50 per cent of Florida's lemon crop by 1960.

Shown above is Lyle Dickman (right), general manager of Dickman Farms, inspecting part of the yield.

VELSICOL CHEMICAL OFFERS GIBBERELLINS

Velsicol Chemical Corp. vice president J. F. Kirk recently announced that the company has added Gibberellin to its line of agricultural chemicals.

The company is cooperating with Federal and state experiment stations in the economic evaluation of gibberellin induced response on major crops. Addition of the plant growth stimulant is part of a continuing expansion of Velsicel's farm chemicals line.

FIELD TESTS WITH RANDOX AND 2,4-D

In field tests conducted by the University of Minnesota this spring and summer, a mixture of Randox and 2,4-D ester when applied as a pre-emergence "band" spray controlled weeds so well that in some cases it was possible to eliminate one cultivation later on, USDA reports.

The 2,4-D was applied at one-half pound per acre while Randox was tried at 4, 5 and 6 pounds per acre. In general, the heavier applications of Randox gave better control. Equally good results were obtained when the spray was broadcast over the entire field, but the cost was much greater than for band spraying.

FOREST TREE NURSERIES TEST NEW CRAG MYLONE

Seventy leading forest tree nurseries across the country are testing Crag Mylone for control of weeds, nematodes and soil fungi in forest tree seed beds. The fumigant, which is manufactured by Union Carbide Chemicals Co., Div. of Union Carbide Corp., is reported to be easy to handle, and no plastic cover is needed to hold the fumigant in soil.

In a majority of beds checked so far, Mylone has given excellent results, according to Union Carbide.

The new product has been used commercially for several months in ornamental propagating beds. In addition to the forest tree nursery tests, it is undergoing experimental use in vegetable and tobacco seed beds, and on turf.

Typical healthy forest tree seed bed. Mylone shows great promise of assuring a safe start for young trees by wiping out weed seeds, nematodes and disease fungi in seed beds.

by Dr. Melvin Nord

PATENT REVIEWS

FERTILIZERS

U. S. 2,786,746, issued March 26, 1957 to Abraham Goldhaar and assigned to Universal Detergents, Inc., is based on the discovery that certain reaction-promoting agents, capable of retaining their activity in the presence of calcium ions and acid of the concentration normally employed in the acidulation of phosphate rock, greatly increase the rate of acidulation of phosphate rock, permit the formation of soluble phosphates to reach higher levels within a shorter period of time, increase the recovery of fluorine and its compounds and acids and produce a better grade of superphosphate. Upon curing, the superphosphate does not set to a hard mass but instead assumes the form of a soft, readily workable mass.

The reaction-promoting agent is an essentially non-hygroscopic, water-soluble, alkali-metal salt of a sulfonated mixture of alkylated derivatives of naphthalene containing methyl groups and/or alkyl groups with 8–12 carbon atoms.

U.S. 2,790,702, issued April 30, 1957 to Robert F. McCullough and assigned to U.S. Atomic Energy Commission, describes a process for the acid treatment of phosphate rock to recover phosphates and uranium values.

U.S. 2,788,269, issued April 9, 1957 to Albert L. Burwell and assigned to University of Oklahoma Research Institute, describes a method for the production of ammonium sulphate from gypsum, in the dry state.

The process is based on the discovery that if calcium sulfate is mixed with ammonium carbonate or bicarbonate in a closed vessel, and if the temperature is raised above the dissociation temperature of ammonium carbonate, a reaction occurs. The dissociation temperatures of the ammonium carbonates are in the range 38–58° C., while ammonium sulfate does not decompose below 100° C. Thus, the reaction will take place between about 58 and 100° C.

U.S. 2,789,045, issued April 16, 1957 to George G. Stier and George D. Conover, assigned to Nopco Chemical Co., relates to the production of superphosphate. Its object is to provide a means for decreasing the time required to achieve complete conversion of phosphate rock into superphosphates and for minimizing the tendency of superphosphate to cake and harden during the curing interval involved in the manufacture of superphosphate and when ultimately packaged or bagged. These results are achieved by the incorporation into the concentrated sulfuric acid used of a product produced by condensing ethylene oxide with an amino subtituted amide.

HERBICIDES

U.S. 2,788,268, issued April 9, 1957 to Joseph A. Tursich and assigned to Columbia-Southern Chemical Corp., discloses the use of propynyl N-phenylcarbamates as herbicides and fungic des.

U.S. 2,789,044, issued April 16, 1957 to Walter E. Steinmetz and assigned to National Aluminate Corp., discloses the use of halogenated pentad enoic acid compounds as herbicides.

SOIL CONDITIONERS

U. S. 2,780,031, issued Feb. 5, 1957 to Louis D. Bryant and assigned in part to Robert B. Ellsworth and William H. Borland, describes a method of improving arable soil, by incorporating into the soil 5–15 per cent by weight of precipitated tricalcium silicate having a particle size of 0.01 to 1 micron.

PESTICIDES

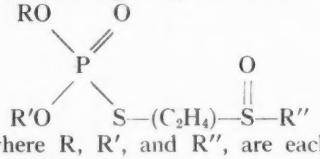
U.S. 2,786,795, issued March 26, 1957 to Waldo B. Ligett, Calvin N. Wolf, and Harry R. Dittmar, assigned to Ethyl Corp., discloses the use of 1,2,3-trichloro-4,6-dinitrobenzene as a fungicide. This compound is of the order of 2000 per cent more effective as a fungicide than its isomer, 1,2,4-trichloro-3,5- dinitrobenzene.

U.S. 2,788,307, issued April 9, 1957 to Ralph Rodriguez-Torrent and Robert N. Fitzwater, relates to the improvement in the storage of liquid pesticidal formulations and the inhibiting of the corrosion of metallic containers.

The invention is based on the discovery that the addition of small amounts of certain metallic thiosulfates and polythionates to emulsifiable concentrate formulations of insecticidal materials will stabilize these concentrates against deterioration or corrosion.

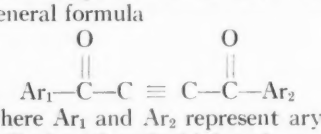
U.S. 2,790,743, issued April 30, 1957 to Nicolaas Dost and Gerarda F. E. M. Klap-Dierick, assigned to Shell Development Co. discloses the use of certain mercapto-substituted hydroquinones as fungicides.

U.S. 2,791,599, issued May 7, 1957 to David W. J. Lane and Dennis F. Heath, assigned to Pest Control Ltd., discloses a new pesticide, having the general formula



where R, R′, and R″, are each alkyl (C 1–4).

U.S. 2,787,573, issued April 2, 1957 to Jack S. Newcomer and assigned to The Pennsylvania Salt Manufacturing Co., discloses the use of certain diketones for the control of fungi and bacteria. The compounds used have the general formula



where Ar_1 and Ar_2 represent aryl radicals (phenyl, biphenyl, terphenyl, or naphthyl) having from 0 to 3 substituents (halogen, or alkyl up to C-5). ▲

PEST REPORTS

Presented in cooperation with the Economic Insect Survey Section, Plant Pest Control Branch, Agricultural Research Service, USDA.

Activity During Late July, Early August

THE fall armyworm was one of the more important cereal and forage pests during late July and early August. By late July this insect was damaging young corn and sorghum in Oklahoma and Kansas. Some young cornfields in Louisiana had up to 100 per cent of the stalks infested and rice and sugarcane were heavily infested in the southern part of the state.

Alabama, Arkansas, Missouri, North Carolina, Tennessee and Texas also reported damage from the fall armyworm. By early August infestations were reported from Maryland, Virginia and Illinois. In Virginia outbreaks were expected in soybeans during the latter part of the month.

APHIDS AND MITES

Aphids were among the principal truck crop pests during the late summer. Population increases were noted on several vegetables in Massachusetts. At Presque Isle, Maine, numbers on potatoes were more than three times the population of last year. Populations were increasing on potatoes in several areas of Colorado and severe infestations were recorded on tomato plantings in the Moscow, Idaho, area. The pea aphid was general on 10,000 acres of peas and the cabbage aphid on 5,000 acres of rape in Lewis county, Idaho. Mites were also a vegetable problem in some areas. Sweet potatoes and lima beans were damaged in Delaware, strawberries in Wisconsin and mint in Washington.

Tomatoes were reported to be injured in New Jersey and Virginia and populations were building up on hops in Oregon. Maryland and Idaho also reported increases in mite populations.

The corn leaf aphid in early August was active in Delaware, Maryland, Virginia, Indiana, Wisconsin, Arkansas, Oklahoma and Utah. Populations which had been heavy in Iowa, Missouri and Kansas were reported on the decline due to parasites and predators.

The spotted alfalfa aphid which this season has not reached the serious proportions experienced the past several years was on the increase in several areas by the latter part of July. Counts in south central Kansas reached 600–1500 per sweep but were light in other parts of the state. Economic populations were present in localized areas of Virginia, Alabama, Georgia, Louisiana, Utah, Arizona and California. States reporting the insect as light included Nevada, Colorado, South Dakota, Nebraska, Iowa, Illinois, Tennessee and Oklahoma.

GRASSHOPPERS

Grasshoppers continued to be one of the more important pests. Reports of heavy infestations of grasshoppers were received from the Tulelake region of California, the Manti area of Utah and the Stanley Basin area of Idaho. In Nebraska infestations were the most extensive and severe since the outbreak years of the 1930's. Controls were applied in several areas of the state. Kansas reported the insects as being the number-one insect problem in the state with severe damage occurring to untreated crops, particularly in the central and northern areas of the state. By early August movement from small grain to other crops was under way in North Dakota and severe damage was expected unless controls were applied. Some damage was expected in Minnesota and Wisconsin and populations were noticeable in Maryland and Delaware.

MEXICAN BEAN AND JAPANESE BEETLES

The Mexican bean beetle was an important pest in some areas. Populations were getting out of hand in some sections of Colorado and control was difficult. Damage was also reported from Rhode Island, Delaware, Tennessee, Alabama and Utah.

During the period Japanese beetle continued to cause heavy widespread damage in several eastern states. Severe infestations on ornamentals, fruits and other crops were reported from Virginia, Maryland, Delaware and Rhode Island.

BOLL WEEVILS

The serious populations of the cotton boll weevil continued in the southeastern states. North Carolina, South Carolina, Georgia and Alabama reported serious infestations in early August with migrations under way. Counts in Mississippi were generally low whereas populations were up in Louisiana. Missouri, Texas and Oklahoma reported low counts while the count increased in Arkansas, but conditions still remained good. Cotton bollworms were on the increase in Texas, Arkansas, Missouri, Georgia, North and South Carolina. Arizona and California also reported increased bollworm populations in localized areas. In general, spider mites were increasing throughout the cotton states. The cotton leafworm required control in a few fields of McLennan and Falls counties, Texas and was defoliating cotton in areas of South Carolina.

Among the livestock pests per-

haps the most important during the period was the screw-worm. In Union county, South Carolina cases appeared earlier and were more numerous than in previous years. The first case from North Carolina was reported June 17 and numerous cases have been reported since that date. Heavy infestations were reported from Spalding county, Georgia, Custer county, Oklahoma and several central Texas counties. Increased activity was reported from several southeast Alabama counties and one report was received from Wapello county, Iowa.

CODLING MOTH

The codling moth was one of the more important fruit insects during late July and early August. Second-brood entries were noted in southern New Jersey earlier than usual and a partial third brood was indicated. In Rhode Island larval infestation of fruit was high and Virginia was experiencing more trouble than usual in scattered orchards. Moderate to severe infestations were reported from localized areas of Wisconsin and Utah.

LEAF ROLLER

The red-banded leaf roller was active in several areas. In Massachusetts the second brood was earlier than usual with the prospect of a third brood in late apples. A very severe infestation was reported in early August from Jersey County, Illinois and another brood was expected in the Carbondale area. Heavy spotted infestations were experienced in localized areas of Michigan where control of the first brood was not satisfactory. ▲

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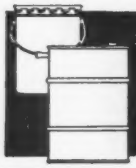

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STATISTICS

NORTH AMERICAN POTASH DELIVERIES

North American potash deliveries by its member producers and the importers amounted to 2,390,584 tons K_2O during the fiscal year June, 1956 through May, 1957, according to the American Potash Institute. This represents an increase of less than 8 per cent over 1955–1956.

Potash for agricultural purposes in the Continental United States amounted to 1,887,887 tons K_2O, an increase of more than 2 per cent over last year. Canada received 89,600 tons K_2O, a decrease of less than 1 per cent; Cuba, 16,519 tons, an increase of 5 per cent; Puerto Rico, 20,296 tons, an increase of 1 per cent; Hawaii, 21,084 tons, a 1 per cent decrease, and other countries, 236,532 tons, an increase of 128 per cent, compared to last year.

Leading grade was muriate of potash, comprising over 92 per cent of the total agricultural potash delivered, while sulfate of potash and sulfate of potash-magnesia together made up more than 7 per cent of deliveries.

Deliveries of non-agricultural potash totaled 118,666 tons K_2O, a decrease of 4 per cent under 1955–56.

RAPID DEVELOPMENT IN SOUTH AFRICAN FERTS.

Rapid development of the chemical fertilizer industry may place the Union of South Africa in a position to produce 96,000 short tons of ammonium sulfate and several thousand tons of nitrogen in the form of ammoniated superphosphate and ammonium nitrate by 1960, the Mines Bureau reports. Coupled with an anticipated increase in the output of superphosphates, this development should enable the Union to be less dependent on imported nitrogenous materials and phosphates.

MINES BUREAU REPORTS U.S. POTASH OUTPUT FOR 1956

Marketable potassium salts production in this country continued its upward trend and reached a new high in 1956 of more than 3.6 million short tons, according to reports by producers to the Bureau of Mines, U. S. Dept. of the Interior.

While sales increased 4 per cent in 1956, apparent consumption remained about the same compared with 1955. Stocks in producers' hands at the close of the year were 17 per cent more than in 1955.

Imports of potash material to the U. S. remained about the same in 1956; exports increased 73 per cent. West Germany, East Germany, France, Spain and Chile continued to be the principal supplying countries. The major portion of exports went to Japan (49 per cent) and countries in the Western Hemisphere (41 per cent).

SUPERPHOSPHATE STOCKS AND SHIPMENTS DOWN

May shipments of superphosphate and other phosphatic fertilizers totaled 173,863 tons, a decrease of 22 per cent from the volume shipped during April, reports the Bureau of the Census.

Stocks held by producing plants on May 31, 1957, totaled 206,682 tons, or 11 per cent less than those held on April 30. These figures are unadjusted for seasonal variation and number of working days.

Production — May, 1957

Compiled from Government Sources

Chemical	Unit	May 1957	May 1956	April 1957
Ammonia, synth. (anhydrous)	s. tons	[2]334,204	310,422	*321,529
Ammonia liquor, coal & coke (NH_3 content)	pounds	3,466,114	3,066,215	2,694,076
Ammonium nitrate, fert. grade (100% NH_4NO_3)	s. tons	203,062	145,804	*196,747
Ammonium sulfate				
synthetic (technical)	s. tons	101,006	95,915	98,366
coke oven by-prod. (inc. amm. thiocyanate)	pounds	165,450,709	167,824,644	155,853,353
BHC (Hexachlorocyclohexane)	pounds	4,572,140	8,716,974	3,485,121
Gamma content	pounds	707,054	1,424,139	608,395
Calcium arsenate (commercial)	s. tons	1,343	1,182	[1]
Copper sulfate (gross)	s. tons	—	—	—
DDT	pounds	12,880,479	13,711,642	11,766,410
2,4-D Acid	pounds	2,780,878	2,627,036	2,719,247
esters and salts	pounds	2,589,358	2,926,783	3,192,170
esters and salts (acid equiv.)	pounds	2,018,931	2,297,386	2,417,339
Lead arsenate (acid and basic)	s. tons	523	436	*849
Phosphoric acid (50% H_3PO_4)	s. tons	[2]383,249	322,354	356,352
Sulfur, native (Frasch)	l. tons	—	543,217	—
Recovered	l. tons	—	38,500	—
Sulfuric acid, gross (100% H_2SO_4)	s. tons	1,422,682	1,381,850	*1,382,494
Superphosphate (100% APA)	s. tons	211,642	223,590	*225,072
Normal and enriched (100% APA)	s. tons	123,173	143,434	*139,990
Concentrated (100% APA)	s. tons	68,067	63,805	61,337
Other phos. fertilizers (inc. wet-base goods)	s. tons	20,402	16,351	23,745
2,4,5-T Acid	pounds	589,044	—	509,621
Urea	pounds	76,563,212	—	88,359,833

*Revised. [1]Withheld to avoid disclosing figures for individual establishments. [2]Includes quantities for 1 plant previously not reporting.

FERTILIZER MATERIALS MARKET

New York

August 20, 1957

Sulfate of Ammonia. Because they do not have any burdensome stocks on hand, producers are making shipments against contracts at contract prices with the market said to be in a firm position. Export business continues to be done which is keeping the domestic market firm.

Ammonium Nitrate. Little change was reported in this market and buyers taking on supplies as needed.

Urea. This material was said to be in better supply and fertilizer buyers had no difficulty in filling their requirements. Domestic production is said to be larger than a year ago.

Nitrogenous Tankage. A better movement is reported in nitrogenous tankage, and because of its present low prices some producers are sold out for the balance of 1957 and prices have a firm tendency. Last sales on basis of $3 to $4 per unit of ammonia ($3.64 to $4.86 per unit N) f.o.b. shipping points.

Castor Pomace. There is no domestic material available at the present time although producers are expected to resume production in about 60 days on a limited scale, with last sales made on the basis of $45.50 per ton f.o.b. production points. Some imported material was recently sold at Southern ports.

Organics. There was some activity in organic fertilizer materials because most buyers have let their stocks run down and find it necessary to place orders in order to make up mixed goods. Blood and tankage were firm in price at $5 per unit of ammonia ($6.08 per unit N) f.o.b. Eastern shipping points, with most of the buying being done by the feed trade. Soybean meal recently advanced and was quoted at $52 per ton in bulk, f.o.b. Decatur, Ill., because of small stocks on hand. As soon as new crop soybeans start to market prices are expected to ease up. Some new crop cottonseed meal sold at $61 per ton f.o.b. Memphis, Tenn. Linseed meal was steady to firm in price.

Fish Meal. Fishing operations were reported satisfactory in more areas and sales continued to be made at about $125 per ton, f.o.b. fish factories. Little imported fish meal is arriving because of the plentiful supply of domestic material.

Bone Meal. Demand for this material was quiet from both the fertilizer and feed trade, with last sales on the basis of $60 per ton, f.o.b. production points.

Hoof Meal. Sales made on a steady basis of $5.75 per unit of ammonia ($6.99 per unit N) f.o.b. Chicago with material going mostly to industrial users.

Superphosphate. With supplies adequate, most buyers are only taking the material into their plants as needed and the same applies to triple superphosphate.

Potash. A rather unstable price situation has developed in this material and most producers are advising their customers they will meet competitive prices. Because of this general situation, some buyers are buying rather cautiously. However, the movement of potash to some sections was reported to be fairly good.

Philadelphia

August 20, 1957

Trading in materials is seasonally quiet. Export demand is fairly good and helps reduce inventories. Improved domestic movement is looked for shortly when fall planting begins. While it develops that recent storm damage in the central states was not so serious as at first reported, the dry weather here in the east has been disastrous.

Sulfate of Ammonia. Market is fairly strong, but the recent good foreign demand is now easing off due to large stocks in Europe. No price changes are indicated.

Ammonium Nitrate. Demand seems to be keeping pretty well up with the supply, and stocks on hand are not excessive. A large order from Greece is helpful in keeping the market in balance.

Urea. This is still quoted at $110 per ton for the agricultural grade, with supply not too plentiful.

Blood, Tankage, Bone. Blood and tankage are both reported in fair demand with the former listed at $5.25 per unit ammonia ($6.38 per unit N) in New York area, and $6 per unit ($7.29 per unit N) Chicago. Tankage is quoted at $5.25 per unit ($6.38 per unit N) New York and $6.50 per unit ($7.90 per unit N) Chicago area. Hoof meal remains unchanged at $5.75 per unit ($6.99 per unit N) in the West, and bone meal $60 per ton.

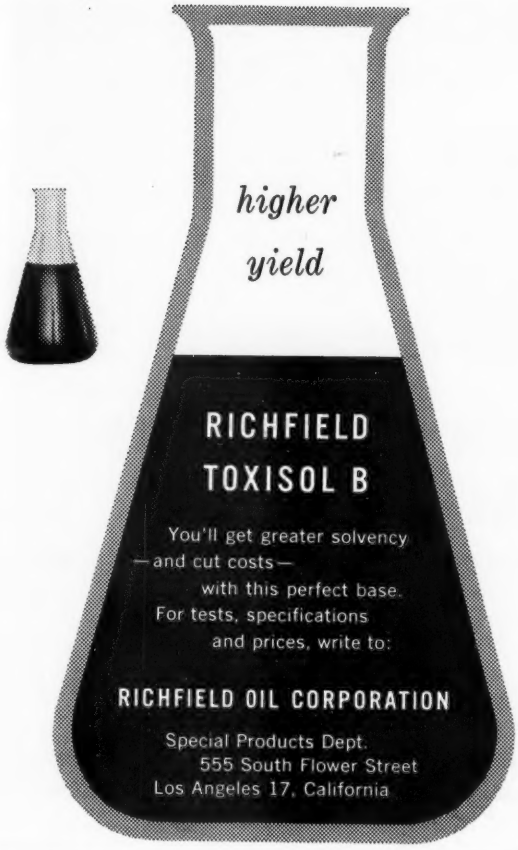
Castor Pomace. This is unobtainable, as the producing plants are still closed down.

Fish Scrap. The catch is reported not so good and the market is somewhat stronger with slightly improved demand. Present prices are $128 per ton for scrap, and $132 for menhaden meal.

Phosphate Rock. A price reduction of 2½ cents per gross ton on all grades is reported.

Superphosphate. No recent change in prices is suggested. Normal grade still stands at 90 cents to 93 cents per unit A.P.A., and triple grade 98 cents per unit.

Potash. Trade is said to be quieter than usual at this season of the year and stocks plentiful. Inquiries from abroad for sizable tonnage are in evidence.



FEEDING AND FERTILIZER MATERIALS

(SINCE 1898)

SAMUEL D. KEIM

1343 ARCH STREET

PHILADELPHIA 7, PA.

 (Continued from page 49)

proponent, is that price supports are not necessary as income-protection devices. This thought says that the play of the free market will produce the income required to keep supply and demand in balance. The other school, typified by farm state lawmakers, believes that the farm problem is both an economic and a social problem. Since it is, they believe, and because of tremendous production potential born in recent years, strong federal action is required to "protect the income of our basic industry." ▲

FUNNY MONEY

Money, of itself, is not very amusing. In fact most people take it quite seriously although they sometimes do funny things with it. Recently there has been a lot of loose talk about tight money, indicating that some confusion exists. So, if you will gather round, kiddies, and be very attentive, we shall brief you on this complicated subject.

Theoretically money is a medium of exchange but we mention this only to show that we know what we are talking about. Actually business is now conducted largely with I.O.U.'s, thus rendering money superfluous if not obsolete. However, from sheer force of habit people persist in trying to make money anyway. It is hardly worth the trouble. Money is not only difficult to come by, but to keep. It is here today and gone tomorrow.

Money is something which, if you haven't any, worries you and, if you have any, worries you. It can be tight or loose (viz. loose change), hard or soft, hot or cold (viz. cold cash), easy or uneasy, saved or squandered. When money loses value, that is Inflation. When it increases in value, that is Deflation. When it stays put, that is a miracle. When it evaporates, that is a calamity.

Love of money is supposed to be the root of all evil, which sounds interesting, but you can get into plenty of trouble by loving other things. Women, for example, or cucumbers, or race horses. They also say that money talks, but it has a language all its own, including the Scandinavian. Some people understand it better than others, which isn't fair. All we have learned in our lifetime, and all anyone needs to know, is this: **you can't eat money.** That is, unless you are a goat. Goats don't appreciate the value of money.

Bankers still consider money quite important. They say it with Musac. Bankers are known as money-changers, not a complimentary term, but someone must do it. Banks also store money, rent money, hire money and, at times, create money. But that is another subject—and even more complicated. The main thing to remember about money is this: MONEY CAN BE MANUFACTURED, BUT CAPITAL MUST BE SAVED. ▲

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Allied Chemical & Dye Corp., New York City
General Chemical Div. —
Nitrogen Division 33–36
American Agricultural Chemical Co., New York City —
American Cyanamid Co., New York City 15
American Potash & Chemical Corp., Los Angeles, Calif. —
Armour Fertilizer Works, Atlanta, Ga. —
Ashcraft-Wilkinson Co., Atlanta, Ga. Back Cover, 19
H. J. Baker & Bro., New York City 17
Baughman Mfg. Co., Jerseyville, Ill. 66
Blue Valley Equip. Mfg. & Eng. Co., Topeka, Kans. —
Bonneville, Ltd., Salt Lake City, Utah —
Bradley & Baker, New York City 9
Bradley Pulverizer Co., Allentown, Pa. 16
Burlap Council, New York City 5
Chase Bag Co., Chicago, Ill. —
Clark Equipt. Co., Benton Harbor, Mich. 1
Clover Chemical Co., Pittsburgh, Pa. —
E. D. Coddington Mfg. Co., Milwaukee, Wis. —
Cole, R. D. Mfg. Co., Newnan, Ga. —
Commercial Solvents Corporation, New York City —
Davison Chemical Co., division of W. R. Grace & Co., Baltimore, Md. 3
E. I. du Pont de Nemours & Co., Inc., Wilmington, Del. —
Duval Sulphur & Potash Co., Houston, Tex. 19
Edwards Laboratory, Norwalk, Ohio —
Escambia Chemical Corp., Pensacola, Fla. —
Exact Weight Scale Co., Columbus, Ohio —
Finco, Inc., North Aurora, Ill. —
Dave Fischbein Co., Minneapolis, Minn. —
Geigy Agricultural Chemicals, New York City —
Glenn Chemical Co., Inc., Chicago, Ill. —
Grand River Chem. Div., Deere & Co., Tulsa, Okla. —
Gruendler Crusher & Pulverizer Co., St. Louis, Mo. —
Hough, The Frank G. Co., Libertyville, Ill. —
Hudson Pulp & Paper Corp., New York City —
Indian Jute Mills Association, New York City 5
International Mineral & Chemicals Corp., Chicago, Ill.
Spec. Prod., Phosphate Chemicals Div. 6, 7
Phosphate Minerals Div. —
Potash Div. —
Jackle, Frank R., New York City 62
Johnson-March, Philadelphia, Pa. —
Joy Manufacturing Co., Pittsburgh, Pa. 57
Keim, Samuel D., Philadelphia, Pa. 65
Kraft Bag Corporation, New York City 25
Ludlow-Saylor Wire Cloth Co., St. Louis, Mo. —
Merck & Co., Inc., Rahway, N. J. 21
Mississippi River Chem. Corp., St. Louis, Mo. —
Monarch Mfg. Works, Inc., Philadelphia, Pa. 55
Monsanto Chemical Co., St. Louis, Mo. —
Munson Mill Machinery Co., Utica, N. Y. —
National Lime & Stone Co., Findlay, Ohio —
National Potash Co., New York City 13
Pennsylvania Salt Mfg. Co. of Wash., Tacoma, Wash. —
Phillips Chemical Co., Bartlesville, Okla. 11
Potash Co. of America, Washington, D. C. Third Cover
Poulsen Co., Los Angeles, Calif. —
Rapids Machinery Co., Marion, Iowa —
Richfield Oil Corp., Los Angeles, Cal. 65
Roberts Chemicals, Inc., Nitro, W. Va. 55
Schmutz Mfg. Co., Louisville, Ky. 32
Shuey & Company, Inc., Savannah, Ga. 55
Sinclair Chemicals, Inc., Chicago, Ill. 26
Sohio Chemical Co., Lima, Ohio 23
Southwest Potash Co., New York City 10
Spraying Systems Co., Bellwood, Ill. —
Stedman Foundry and Machine Co., Inc., Aurora, Ind. —
Stephens-Adamson Mfg. Co., Aurora, Ill. —
Sturtevant Mill Co., Boston, Mass. 39
Tennessee Corporation, Atlanta, Ga. 30
Texas Gulf Sulphur Co., New York City 24
Thomas Alabama Kaolin Co., Baltimore, Md. 22
Tractomotive Corp., Deerfield, Ill. 29
Union Bag-Camp Paper Corp., New York City 40
U. S. Graphite Co., Saginaw, Mich. —
U. S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla. 9
United States Potash Co., New York City Second Cover
Velsicol Chemical Corp., Chicago, Ill. —
Vulcan Containers, Inc., Bellwood, Ill. 31
Vulcan Steel Container Co., Birmingham, Ala. 62
Wisc. Alumni Research Foundation, Madison, Wisc. 58
Woodward & Dickerson, Inc., Philadelphia, Pa. —

Buyers' Guide

Classified Index to Advertisers in 'Farm Chemicals'

ALDRIN
Ashcraft-Wilkinson Co., Atlanta, Ga.

AMMONIA—Anhydrous and Liquor
Allied Chemical & Dye Corp., Nitrogen Div., N.Y.C.
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See Sulfate of Ammonia

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Buyers' Guide

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American Agricultural Chemical Co., N. Y. C
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Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Bradley & Baker, N. Y. C.
International Min. & Chem. Corp., Chicago, Ill
Woodward & Dickerson, Inc., Philadelphia, Pa.

PHOSPHORIC ACID

American Agricultural Chemical Co., N. Y. C.
Allied Chemical & Dye Corp., General Chemical Div., N. Y. C.

PLANT CONSTRUCTION—Fertilizer and Acid

Blue Valley Equipt. Mfg. & Eng. Co., Topeka, Kans.
Stedman Foundry and Machine Co., Aurora, Ind
Sturtevant Mill Co., Boston Mass.

POTASH—Muriate

American Potash & Chemical Corp., Los Angeles, California
Ashcraft-Wilkinson Co., (Duval Potash) Atlanta, Ga.
H. J. Baker & Bro., N. Y. C.
Bonneville, Ltd., Salt Lake City, Utah
Bradley & Baker, N. Y. C.
Duval Sulphur & Potash Co., Houston, Tex.
International Min. & Chem. Corp., Chicago, Ill.
National Potash Co., N. Y. C.
Potash Co. of America, Washington, D. C.
Southwest Potash Corp., New York City
United States Potash Co., N. Y. C.

POTASH—Sulfate

American Potash & Chemical Corp., Los Angeles, California
International Min. & Chem. Corp., Chicago, Ill.
Potash Co. of America, Washington, D. C.

PRINTING PRESSES—Bag

Schmutz Mfg. Co., Louisville, Ky.

PYROPHYLLITE

Ashcraft-Wilkinson Co., Atlanta, Ga.

REPAIR PARTS AND CASTINGS

tedman Foundry and Machine Co., Aurora, Ind.

SCALES—Including Automatic Baggers

Exact Weight Scale Co., Columbus, O.
Stedman Foundry and Machine Co., Aurora, Ind.

SCREENS

Blue Valley Equipt. Mfg. & Eng. Co., Topeka, Kans.
Finco Inc., North Aurora, Ill.
Ludlow-Saylor Wire Cloth Co., St. Louis, Mo.
Stedman Foundry and Machine Co., Aurora, Ind.
Sturtevant Mill Co., Boston, Mass.

SCRUBBERS

Johnson-March, Philadelphia, Pa.

SOLVENTS

Richfield Oil Corp., Los Angeles, Calif.

SHOVEL LOADERS

Clark Equipt. Co., Benton Harbor, Mich.
Hough, The Frank G. Co., Libertyville, Ill.
Tractomotive Corp., Deerfield, Ill.

SLUDGE

H. J. Baker & Bro., New York City

SOILTEST EQUIPMENT

The Edwards Laboratory, Norwalk, O.

SPRAYERS

Finco, Inc., N. Aurora, Ill.

SPRAYS

Monarch Mfg. Works, Inc., Philadelphia, Pa.
Spraying Systems Co., Bellwood, Ill.
Baughman Mfg. Co., Jerseyville, Ill.

SPREADERS, TRUCK

Baughman Manufacturing Co., Jerseyville, Ill.

STORAGE TANKS

Cole, R. D., Manufacturing Co., Newnan, Ga.

SULFATE OF AMMONIA

Allied Chemical & Dye Corp., Nitrogen Div., N.Y.C.
American Agricultural Chemcal Co., N. Y. C.
American Cyanamid Co., New York City
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
H. J. Baker & Bro., N. Y. C.
Bradley & Baker, N. Y. C.
Jackle, Frank R., New York City
Phillips Chemical Co., Bartlesville, Okla.
Woodward & Dickerson, Inc., Philadelphia, Pa.

SULFATE OF POTASH—MAGNESIA

International Min. & Chem. Corp., Chicago, Ill.

SULFUR

Ashcraft-Wilkinson Co., Atlanta, Ga.
Texas Gulf Sulphur Co., New York City
Woodward & Dickerson, Inc., Philadelphia, Pa.

SULFUR—Dusting & Spraying

Ashcraft-Wilkinson Co., Atlanta, Ga.
U. S. Phosphoric Products Div., Tennessee Corp., Tampa, Fla.

SULFURIC ACID

Allied Chemical & Dye Corp. General Chemical Div., N. Y. C.
American Agricultural Chemical Co., N. Y. C.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Bradley & Baker, N. Y. C.
International Min. & Chem. Corp., Chicago, Ill.
U. S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.

SUPERPHOSPHATE

American Agricultural Chemical Co., N. Y. C.
Armour Fertilizer Works, Atlanta, Ga
Ashcraft-Wilkinson Co., Atlanta, Ga.
H. J. Baker & Bro., N. Y. C.
Bradley & Baker, N. Y. C.
Davison Chemical Co., div. of W. R. Grace & Co. Baltimore, Md.
International Min. & Chem. Corp., Chicago, Ill.
Jackle, Frank R., New York City
U. S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.
Woodward & Dickerson, Inc., Philadelphia, Pa.

SUPERPHOSPHATE—Concentrated

American Cyanamid Co., New York City
Armour Fertilizer Works, Atlanta, Ga.
H. J. Baker & Bro., N. Y. C.
Bradley & Baker, N. Y. C.
Davison Chemical Co., Div. of W. R. Grace & Co., Baltimore, Md.
International Min. & Chem. Corp., Chicago, Ill.
Phillips Chemical Co., Bartlesville, Okla.
U. S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.
Woodward & Dickerson, Inc., Philadelphia, Pa.

TALC

Ashcraft-Wilkinson Co., Atlanta, Ga.

TANKAGE

American Agricultural Chemical Co., N. Y. C.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
H. J. Baker & Bro., N. Y. C.
Bradley & Baker, N. Y. C.
International Min. & Chem. Corp., Chicago, Ill.
Jackle, Frank R., New York City
Woodward & Dickerson, Inc., Philadelphia, Pa.

TANKS—NH3 and Liquid N

Cole, R. D., Manufacturing Co., Newnan, Ga.

TOXAPHENE

Ashcraft-Wilkinson Co., Atlanta, Ga.

TRUCKS—SPREADER

Baughman Mfg. Co., Jerseyville, Ill.

UREA & UREA PRODUCTS

Allied Chemical & Dye Corp., Nitrogen Div., N.Y.C.
H. J. Baker & Bro., N. Y. C.
Bradley & Baker, N. Y. C.
E. I. duPont de Nemours & Co., Wilmington, Del.
Grand River Chem. Div., Deere & Co., Tulsa, Okla.
Sohio Chemical Co., Lima, O.

UREA-FORM

E. I. duPont de Nemours & Co., Wilmington, Del.
Nitro-Form Agricultural Chemicals, Woonsocket, R. I.

VALVES

Monarch Mfg. Works, Inc., Philadelphia, Pa.

ZINC SULFATE

Tennessee Corp., Atlanta, Ga.

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